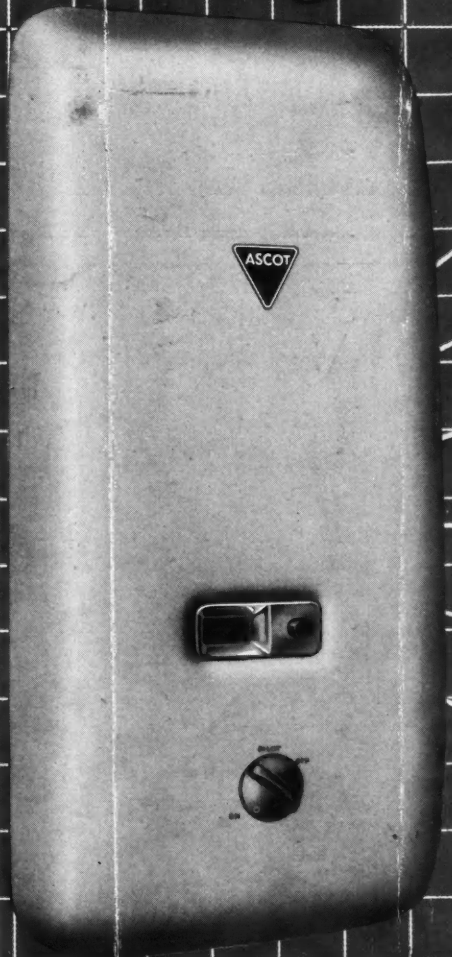
# Gas Journal

Vol. 271. 104th Year. LONDON, SEPTEMBER 10, 1952. No. 4658. Price 1/3

Registered as a Newspaper



FIRST BALANCED FLUE GAS WATER HEATER




ASCOT 715 INSTANTANEOUS MULTIPOINT

Vitiation of air in room impossible. No down draughts.

Compactness: low relief contour projects only 5 inches.

Can be fitted in service ducts or cupboards.

No external flue pipe or cowl: flue ends in flat ventile.

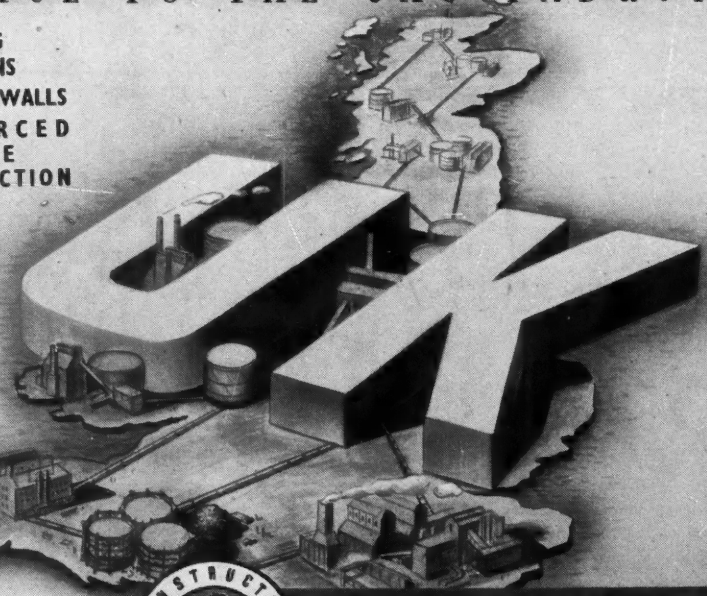
Ventile can be fitted beneath balconies or other projections.

Full multipoint service to baths, basins and sinks.

ASCOT

SERVICE TO THE GAS INDUSTRY

- MAINLAYING
- FOUNDATIONS
- RETAINING WALLS
- REINFORCED CONCRETE CONSTRUCTION




U.K CONSTRUCTION ENGINEERING CO. LTD.

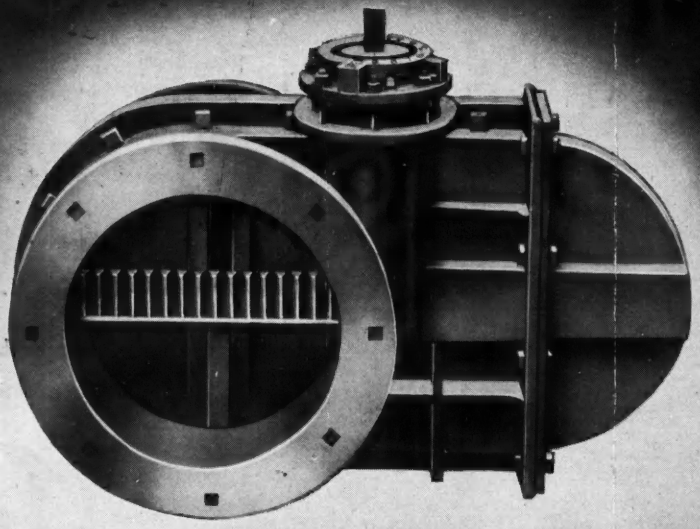
UNITED KINGDOM CONSTRUCTION

CIVIL ENGINEERING CONTRACTORS

FRAMO, UKOMENC, KIRKBY INDUSTRIAL ESTATE

GAS VALVES

The STANDARD DONKIN RACK and PINION LOW PRESSURE VALVE.

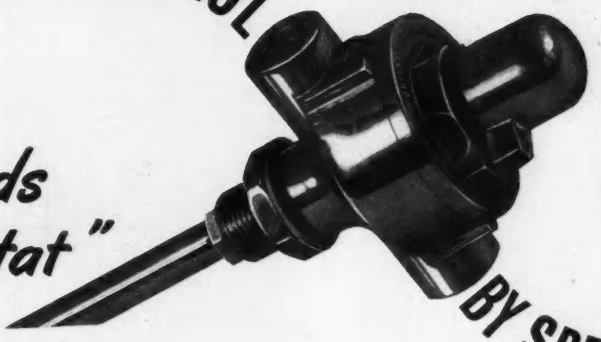


14,000 SOLD ANNUALLY

The BRYAN DONKIN CO LTD · CHESTERFIELD

LONDON · MANCHESTER · MEMBERS OF THE SOCIETY OF BRITISH GAS INDUSTRIES

# INDUSTRIAL GAS CONTROL



"So Much Depends on the Thermostat"

BY SPERRYN

Spersom Thermostats embody several exclusive features in their design, and give many years of accurate and efficient temperature control. All materials are of the highest quality and every thermostat is thoroughly tested before despatch.

T.W. 700 Constant Setting Type and T.W. 701 Variable Setting Type.

For further information please apply for Pamphlet No. G.307.

**SPERRYN & CO., LTD.**

MOORSOM STREET, BIRMINGHAM 6

Phone: ASTON CROSS 4011-5

Spersom TRADE MARK

London Address: 21-23, Gt. Suffolk Street, S.E.1

Phone: WATerloo 6418

# George Glover's

GAS METERS

## PREPAYMENT METERS

*Dependable Year-in Year-out*

Product of Radiation Ltd.

1/- Single Coin

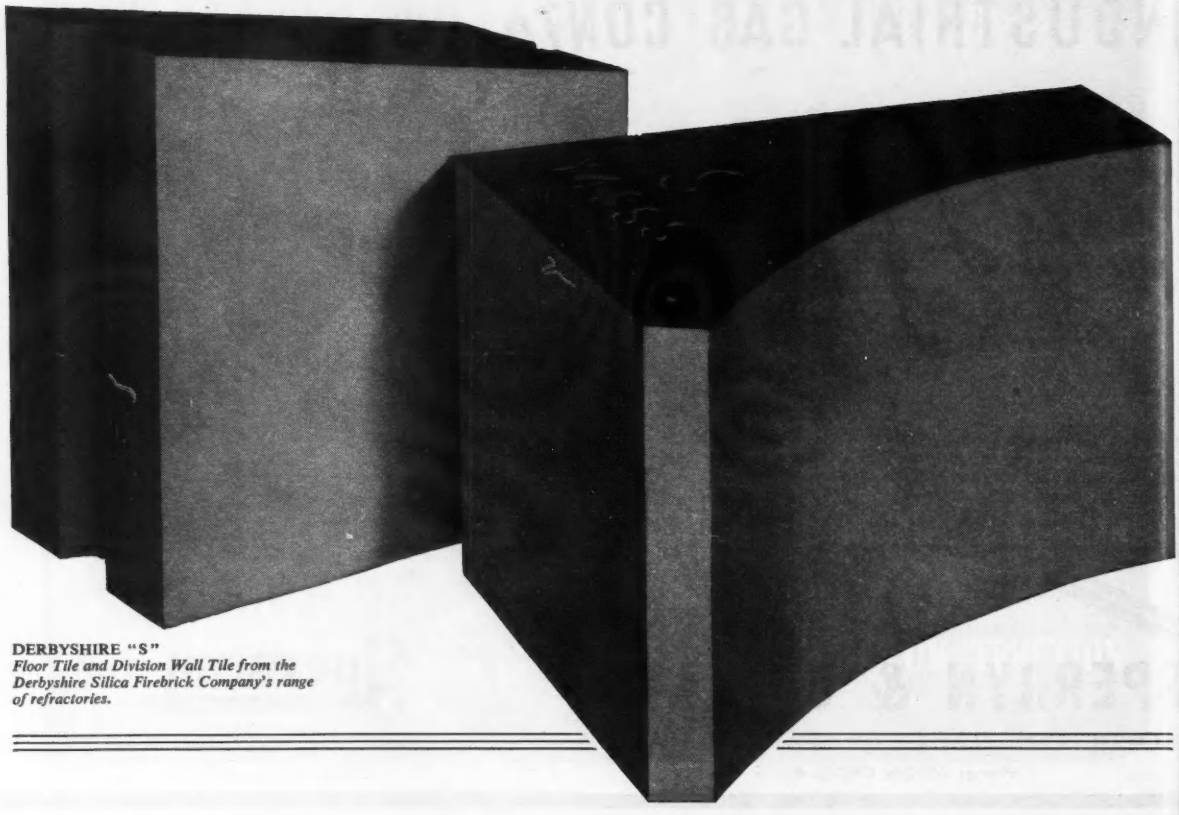
1/- Dual Purpose (Refrigerator)

1/- and 1d Two Coin (Consumer's option)

1/- and 6d Two Coin (Consumer's option)

GEORGE GLOVER & CO. LTD.

LONDON · LEEDS · CARDIFF · MANCHESTER · WARRINGTON



DERBYSHIRE "S"
*Floor Tile and Division Wall Tile from the Derbyshire Silica Firebrick Company's range of refractories.*

# DERBYSHIRE SILICA—the name known throughout industry for first class refractories.

**DERBYSHIRE "S" and "D.S.F."**
*(90% Silica)*

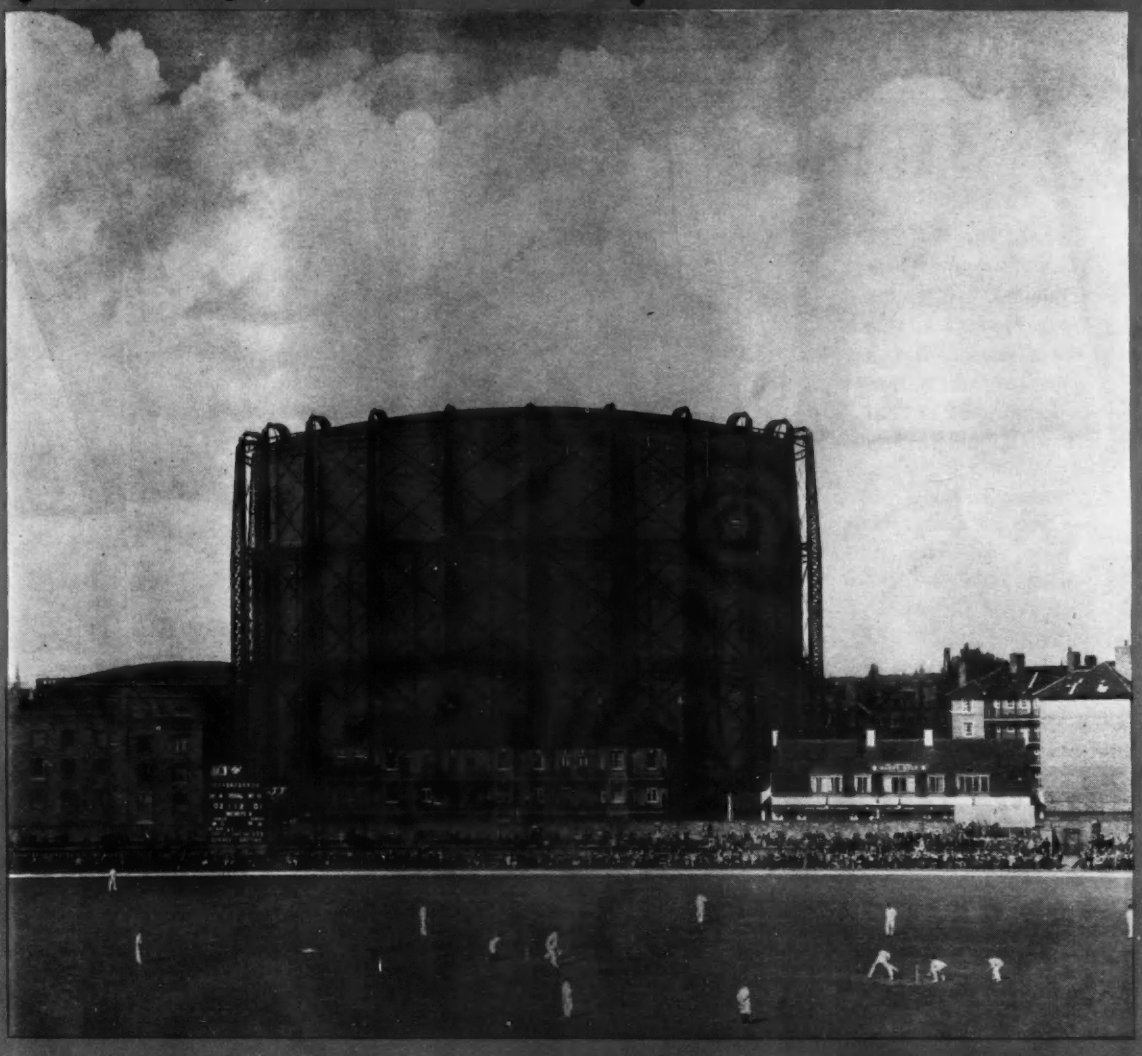
Refractories for all purposes including Vertical and Horizontal Retorts, Soakers, Puddling Furnaces, Reheating and Annealing Furnaces, Forge Furnaces, Checkers, Cupolas and Glass Furnaces.

*Other D.S.F. products include*
PEAKSIL *(95% Silica)* FRISIL *(Sillimanite)*
DUROSIL
*(The new British Plastic Refractory)*
and DOME INSULATION *(Diatomite)*

DSF
**DERBYSHIRE SILICA FIREBRICK CO., LTD.**
FRIDEN · HARTINGTON · NEAR BUXTON · DERBYSHIRE
Grams: Silica, Friden, Hartington. 'Phone: Youlgrave 271 (3 lines)

T.A. 427

"Good Sportsmen & Good Friends!"



THE COUNTY CHAMPIONS PLAY UNDER THE SHADOW OF A CLAYTON HOLDER

The 6 Million Frame Guided Gasholder at Kennington Oval, was reconstructed following war damage, by Claytons of Leeds ; in the background . . . the new 2 million Spiral Guided Holder, also erected by Claytons to replace another war-damaged Holder.

Gasholders of all Types by

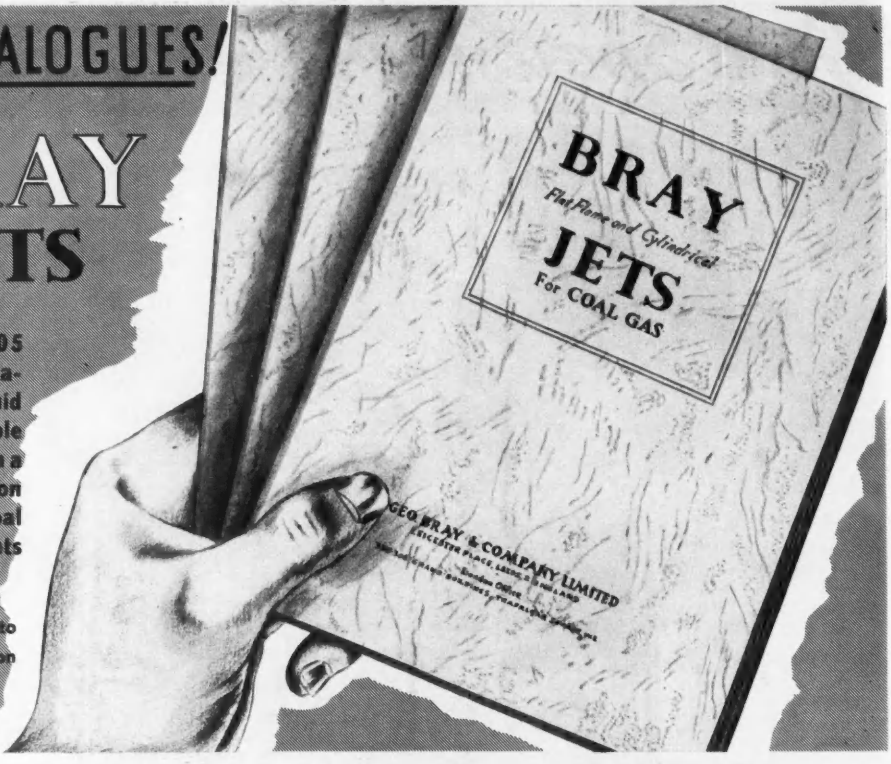
CLAYTON SON & CO. LTD.
HUNSLET LEEDS YORKSHIRE

# NEW CATALOGUES!

# BRAY JETS

**Catalogue No. 205 (Coal Gas) and Catalogue No. 210 (Liquid Gas) are now available. These issues contain a wealth of information concerning BRAY Coal Gas and Liquid Gas Jets**

**We shall be pleased to forward you copies on request.**




**GEO. BRAY & CO. LTD. LEICESTER PLACE, LEEDS 2.**

RAWLPLUG WALL PLUGS

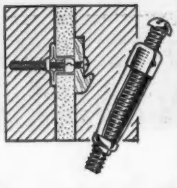
# FIXING DEVICES & TOOLS

*Solve all your Fixing Problems*

THE RAWLPLUG CO. LTD.
Cromwell Rd., London, S.W.7

# RAWLPLUGS AND RAWLTOOLS

**You will ensure that a screw has a permanent stronghold in Brick, Concrete, Stone, Tile, Cement, Marble or Glass if you use a Rawlplug. RAWLPLUGS grip by expansion against the solid sides of the hole, providing clean, neat, reliable fixings. There is a Rawlplug for every size of screw from No. 3 for light wiring to No. 30, which will take a direct load of over 4 tons. Ask for free Rawlplug reference chart, which gives interesting technical data and illustrates actual sizes of Rawlplugs.**

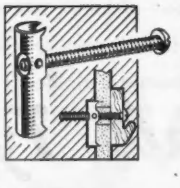


## RAWLANCHORS

make permanent tapped fittings in Plasterboard, Wallboard, Plywood, Hollow Bricks and Tiles, etc. The flexible anchor is collapsed by the normal screwing or with a special tool and forms a strong wing-shaped fitting at the back of the material. Made to take ¼" and ⅜" Whit. screws.

## RAWLBOLTS

For fixing heavy plant and equipment securely, quickly, without grouting, mess or fatigue, RAWLBOLTS are the accepted modern method. Two types are made, Loose Bolt and Bolt Projecting. Sizes are ¼" x 2" to 1" x 12" Whit. thread.



## GRAVITY TOGGLES

make fixings to all kinds of partition boards, where it is difficult to use normal methods. On being pushed through the hole in the material, the loose member falls into position and when the screw is turned the member tightens against the back of the material. Fitted with a Whit. screw.

## DURIUM DRILLS

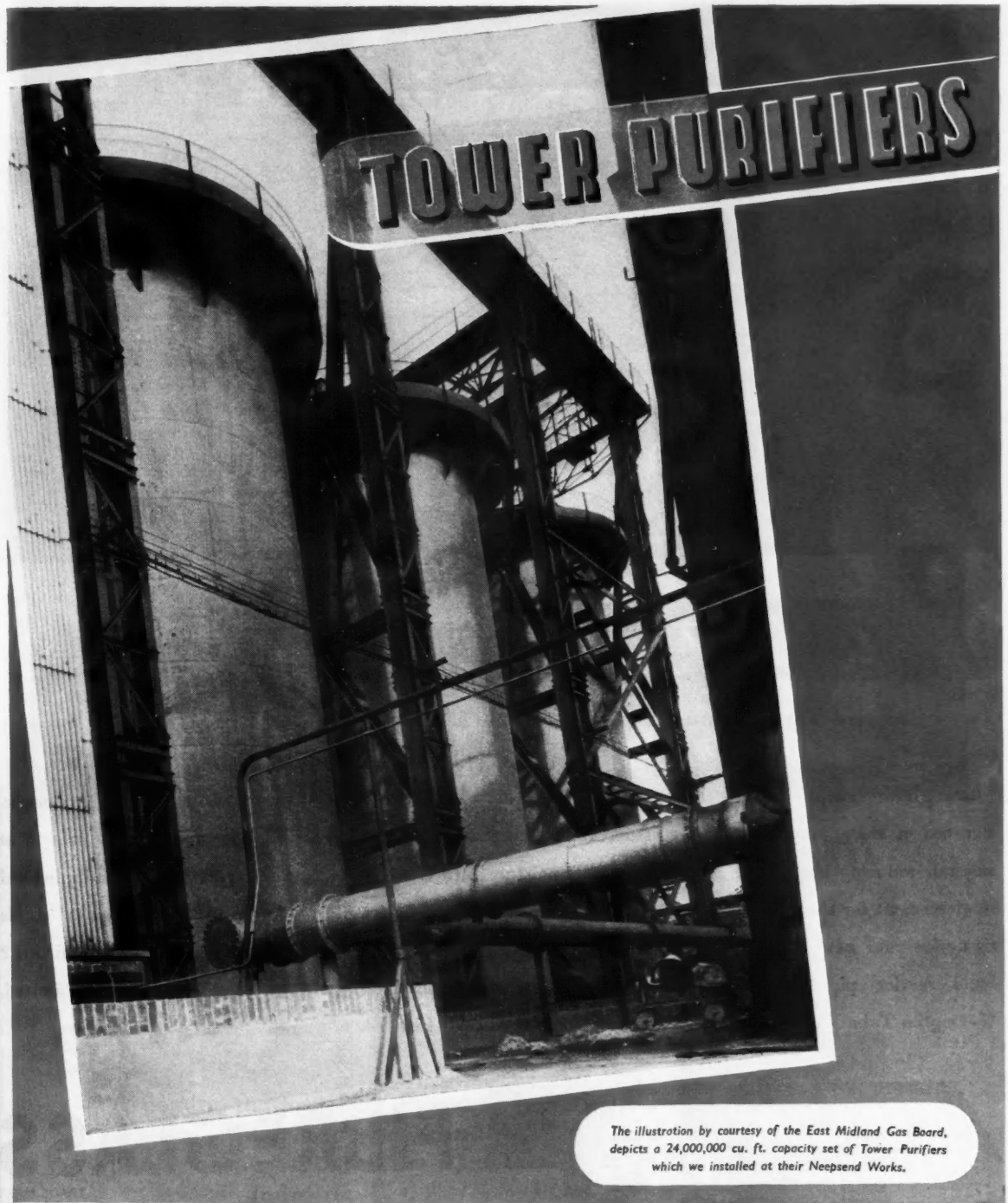
Spiral fluted masonry drills which can be used in a hand brace for boring clean round holes in brick, stone, marble, tile, etc. They have fifty times the life of ordinary drills because the Durium Carbide tip is harder than any metal or alloy. Sizes made are for Rawlplug Nos. 6 to 30 and C.D.E. & G. for Rawlbolts. Long Durium Drills are also made for boring right through walls.

## RAWLNUTS

A rubber tube in which is bonded a tapped metal nut. The action of screwing pulls the rubber into a rivet-shaped head at the back of the material. This device is waterproof, vibration proof and and insulating.

## R.P.I. Slow Speed DRILL

For speedy drilling in thin or hollow materials or in masonry. Takes Rawlplug Durium Tipped Masonry Drills up to ⅜", ordinary twist drills up to ½". 600 r.p.m. running light, 450 r.p.m. full load. Robust, powerful, yet under 5 lbs. in weight. Voltages 100/110, 200/220, 230/250, AC/DC. In strong box.




*The illustration by courtesy of the East Midland Gas Board, depicts a 24,000,000 cu. ft. capacity set of Tower Purifiers which we installed at their Neepsend Works.*

# NEWTON CHAMBERS

## & CO. LTD. THORNCLIFFE, Nr. SHEFFIELD

# THESE Steel Pipes

COURTESY STEWARTS AND LLOYDS LTD.

# will NOT corrode

They are wrapped with 'Fibreglass' staple tissue applied in the factory as a reinforcement for the protective bitumen coating.

**'Fibreglass' staple tissue is non-corrosive, completely inert, rotproof and non-hygroscopic.** Because of these properties staple tissue, unlike natural-fibre membranes, will not promote the growth of sulphate-reducing bacteria or allow wicking of moisture into the coating. 'Fibreglass' gives undiminished reinforcement for the entire life of the pipe. You can specify service pipes wrapped with 'Fibreglass' staple tissue for your next distribution scheme. Why not use 'Fibreglass' to cut maintenance costs in the future? Steel service pipes wrapped with staple tissue are obtainable from Stewarts and Lloyds Limited, Wellington Tube Works Limited and Lambert Bros. (Walsall) Limited.

## ...thanks to FIBREGLASS

TRADE MARK

---

For structural heat and cold insulation. Sound-deadening. Acoustic correction. Porous membranes for pipe wrapping, flooring, roofing. Battery retainers and air filters. In textile form for electrical insulation.

**FIBREGLASS LIMITED, RAVENHEAD, ST. HELENS, LANCASHIRE (St. Helens 4224)**

**LONDON OFFICE:** *63/65 Piccadilly, W.1 (Regent 2115/6)* **GLASGOW OFFICE:** *136 Renfield Street (Douglas 2687)*
**NEWCASTLE-ON-TYNE OFFICE:** *16 Dean St.* **BIRMINGHAM OFFICE:** *Piccadilly Arcade, 105 New St. (Midland 0464/5)*
**MANCHESTER OFFICE:** *11 Piccadilly (Blackfriars 8863)* **DUBLIN OFFICE:** *21 Merrion Square North (Dublin 66024)*

UNSURPASSED

J47

Service & Appliance Governor

A general-purpose Low Pressure Governor with 'a thousand-and-one' uses within the Gas Industry.

To suit inlet pressures up to 22-inch W.G.: outlet pressure 2½-inch W.G. (adjustable).

SIZES 3/4" TO 2"

HIGH CAPACITY

LOW PRESSURE

JEAVONS ENGINEERING CO., TIPTON, STAFFS

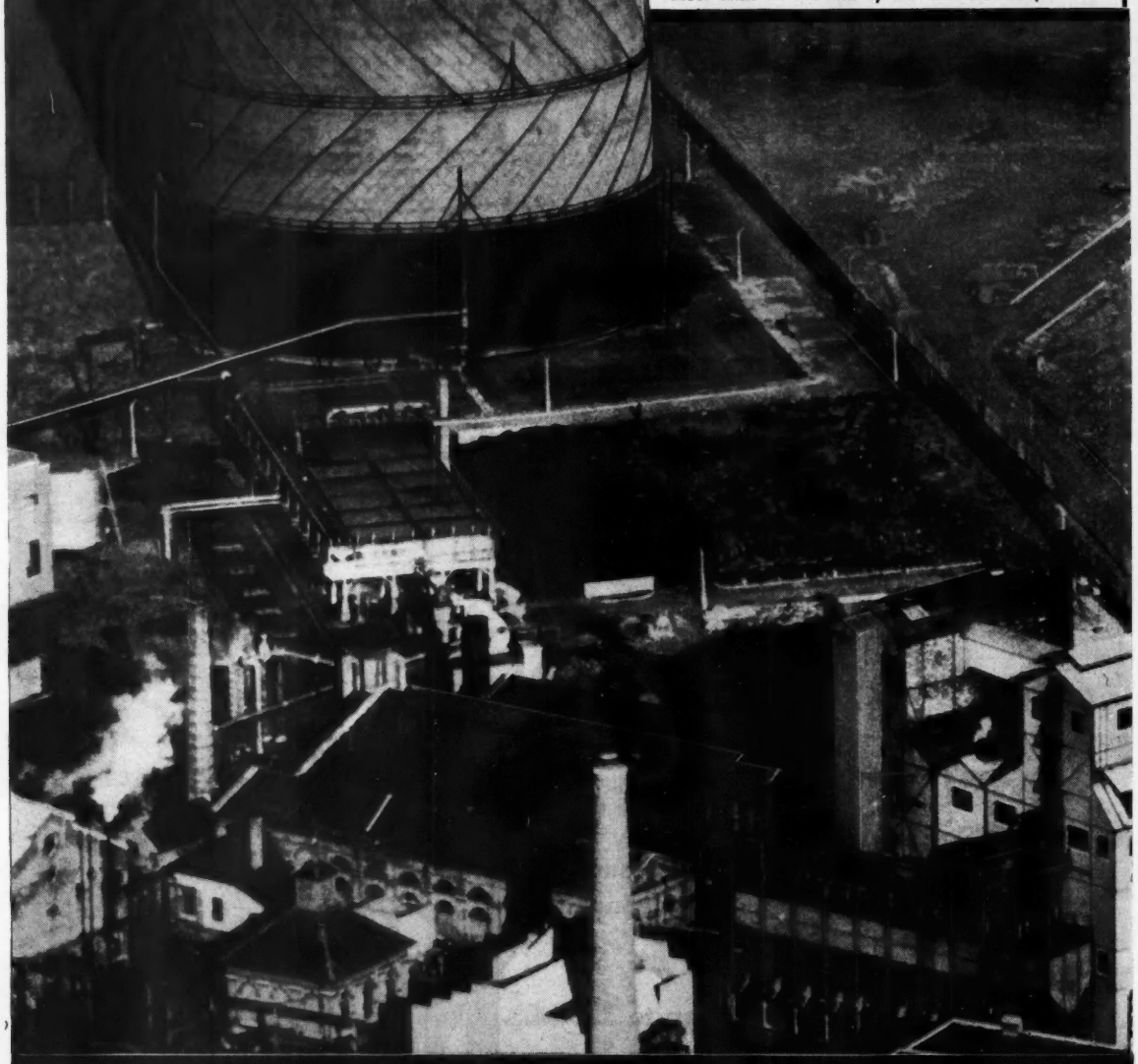
PROPRIETORS: E. E. JEAVONS & CO., LTD.

'Grams: 'PIPELINES' - Tel: TIPTON 2161 (5 lines)

# OXLEY

## ALL-WELDED GASHOLDERS

The illustration shows an aerial wiew of a 1,500,000 cu. ft. all-welded, spiral-guided gasholder.
Steel tank 140 ft. dia. by 38 ft. 3 ins. deep.



**OXLEY ENGINEERING CO. LTD., HUNSLET, LEEDS 10**

Telephone : Leeds 32521
Telegrams : Oxbros, Leeds 10

London Office : WINCHESTER HOUSE, OLD BROAD STREET, E.C.2.
Telephone : London Wall 3731 Telegrams : Asbengpro, Stock, London

W.131

Whatever the Specification

40 YEARS' SERVICE TO THE GAS INDUSTRY

Whatever the Specification and whatever the Service, Diameter, Length, Pressure, Temperature, Height or Depth, William Press & Son undertake Pipework installations anywhere. Expert and personal attention given immediately on request.

PIPEWORK *by* PRESS

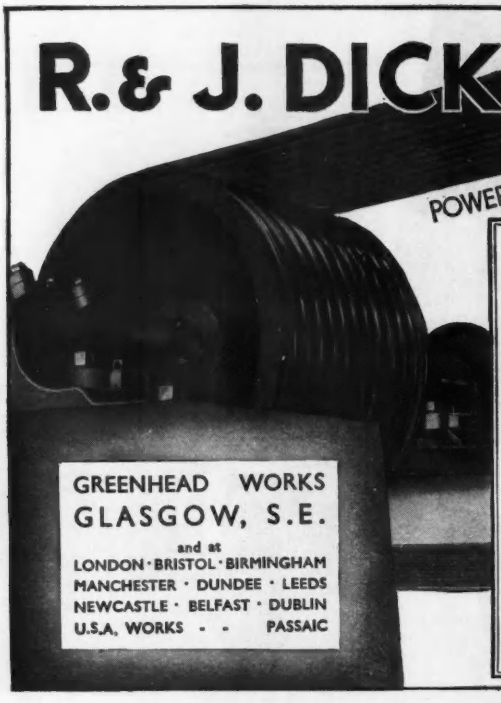
**William Press & Son Limited**

22, QUEEN ANNE'S GATE, WESTMINSTER, S.W.1
Telephone: WHitehall 1752-3 & 2961 Telegrams: Unwater, Parl, London

WILLOUGHBY LANE, TOTTENHAM, N.17
Telephone: TOTtenham 2665-8 Telegrams: Unwater, Southtot, London

# R. & J. DICK LTD.

POWER TRANSMISSION SPECIALISTS



GREENHEAD WORKS
GLASGOW, S.E.
and at
LONDON · BRISTOL · BIRMINGHAM
MANCHESTER · DUNDEE · LEEDS
NEWCASTLE · BELFAST · DUBLIN
U.S.A. WORKS - - PASSAIC

Manufacturers of :-

"DICK'S ORIGINAL" BALATA Belts
For all general purpose drives

"DIXEL" VEE ROPES
Made endless or open for drives up to 3 000 H.P.

"DIXIT" Belting
Acid and Heat Resistant

"RUBERIX" BELTING
Solid Woven from "Filastic" yarn Vulcanised

"DIXADD" BELTING
Combination Belt giving extra power

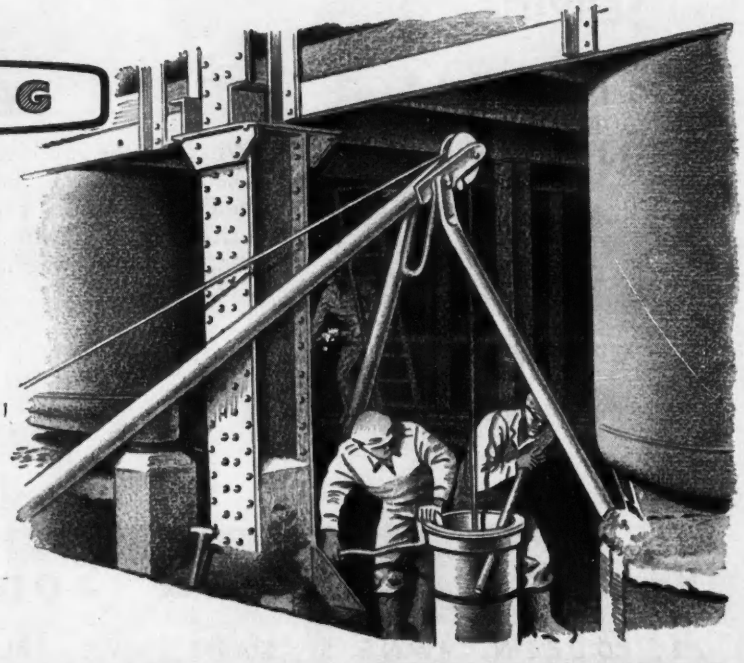
"DICKROPE"
RUBBER, MOULDED, ENDLESS

*Catalogues and Price Lists on application*

# PILING

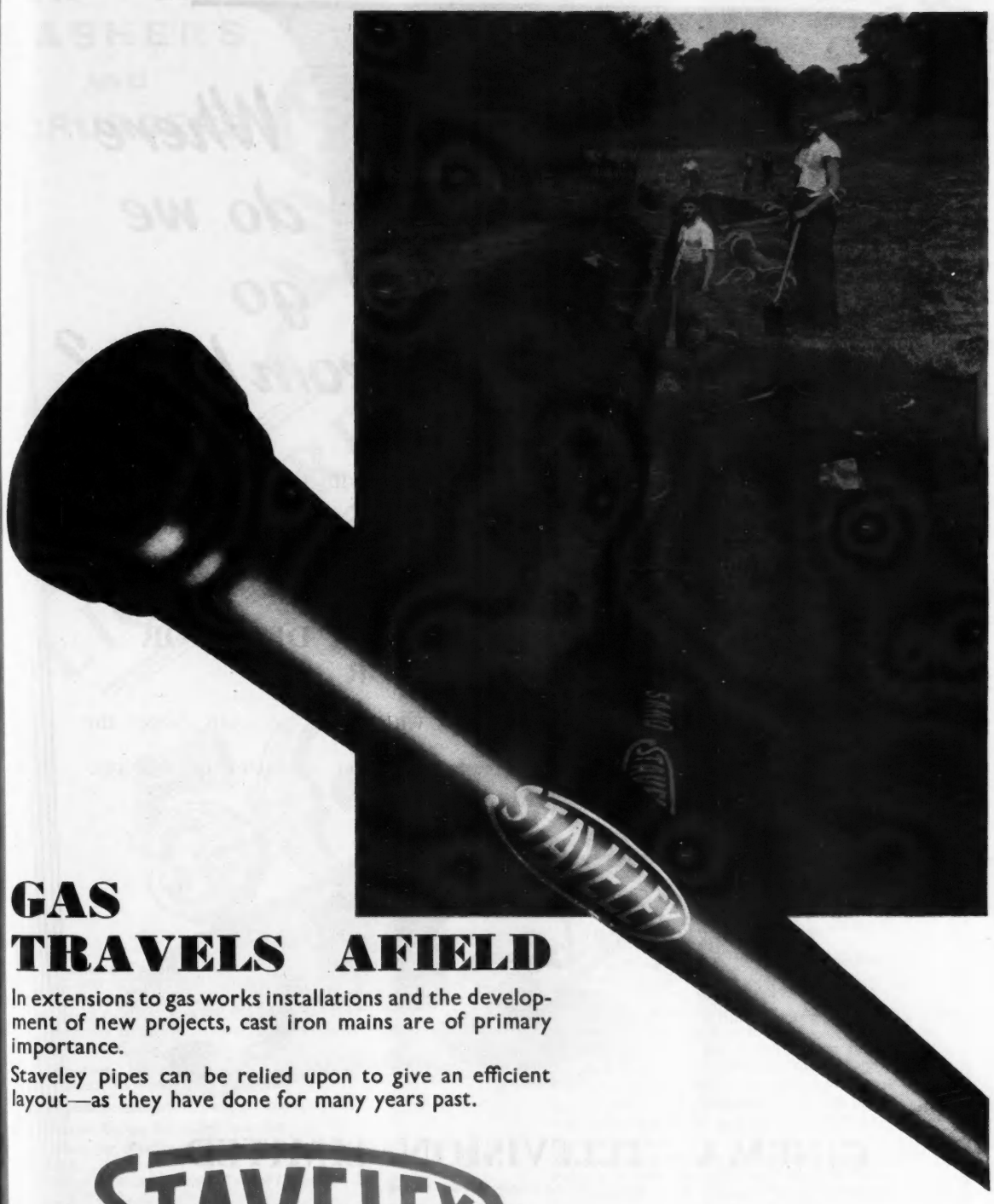
The Cementation Company, Ltd., have the resources and the experience to undertake piling work for Hammer Foundations, Factory Extensions, Machinery Bases, Underpinning, Bridges and any similar purpose in any part of the world.

—And the skill to complete the work quickly and inexpensively even where headroom and working space are limited and freedom from harmful vibration is essential.



BY THE CEMENTATION *Company Limited*

BENTLEY WORKS · DONCASTER · Tel. DON. 54177-8-9




# GAS TRAVELS AFIELD

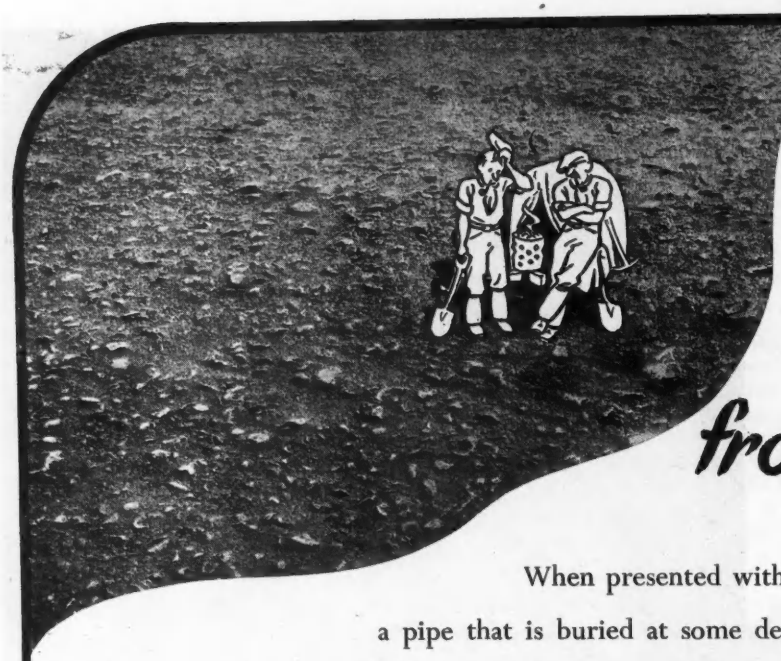
In extensions to gas works installations and the development of new projects, cast iron mains are of primary importance.

Staveley pipes can be relied upon to give an efficient layout—as they have done for many years past.

STAVELEY

SAND & METAL SPUN PIPES

THE STAVELEY IRON & CHEMICAL CO. LTD. NR. CHESTERFIELD



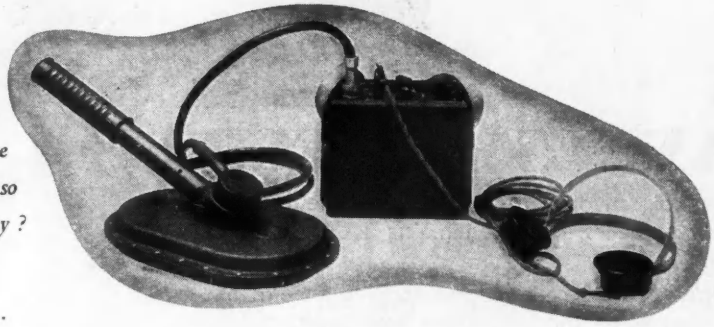
# Where do we go from here?

When presented with the problem of finding a pipe that is buried at some depth somewhere beneath the ground, the solution may not at first seem easy — but it is!

## The "CINTEL" Portable METAL DETECTOR with OSCILLATOR

offers the complete solution, an instrument with which you can detect the pipe, trace its route and determine its depth, all in a matter of minutes.

*Full details of this essential instrument are available on request, so why not write to-day?*



## CINEMA - TELEVISION LIMITED

A Company within the J. Arthur Rank Organisation

WORSLEY BRIDGE ROAD · LONDON · SE26

Telephone: HITher Green 4600

SALES AND SERVICING AGENTS

F. C. Robinson & Partners Ltd., 287 Deansgate, Manchester, 3

Hawnt & Co., Ltd., 59 Moor St., Birmingham, 4

Atkins, Robertson & Whiteford Ltd., 100 Torrisdale Street, Glasgow, S.2

CINTEL

REGISTERED TRADE MA

**FOR PURIFIERS WASHERS AND SCRUBBERS**

LION GRIDS LAST LONGER

Phone : FARNHAM 5291-3

Telegrams : CROSBYS FARNHAM

**REPAIRS AND REPACKING OF COOLING TOWERS**

*ESTABLISHED OVER 70 YEARS*

**CROSBY & CO. LTD.**

**LION WORKS, FARNHAM, SURREY**

---

**50** *years service to the gas industry*

**For half a century our policy has been to produce the most efficient, attractive and economical range of gas appliances. This policy has won us the confidence of the gas industry and the engineering industry and our aim for the future is to uphold the fine traditions we have built up in the past.**

***OUR RANGE OF SPECIALISED PRODUCTS INCLUDES***

**Flameless Radiant Gas Burners** with a temperature range of 600° C. to 1,600° C. for fluorescent tube baking, galvanising baths, tin baths, pipe creasing, pipe bending, metal melting, tool hardening, confectionery caramel toasting, linoleum drying, glass bending, glass colour process, etc.

**Duoflam Burners** for hot water and steam sectional boilers, sterilizers, fish pans, etc.

**Flashrite Burners** for biscuit ovens, etc.

**Sugar Boilers** for sweet factories.

**Roasting Machines** for malt, nuts, coffee, cocoa beans, etc.

**High Intensity Radiant Tunnel Ovens** for drying paint in 20/30 seconds.

**Cremation Furnaces.**

**Premix Automatic Mixing Machines** for Butane, Propane, Natural Gas and Town's Gas—capacities from 2,000 cu. ft. to 30,000 cu. ft. per hour.

**Varnish Boiling Equipment**—portable and stationary pots.

**Moisture Evaporating Ovens.**

**Gas Compressors** — 10″ to 80″ water column outlet pressures ; capacities 1,000 to 30,000 cu. ft. per hour.

**Fans** for high temperature air-recirculation up to 700° C.

**Direct Fired Hot-Air Furnaces** to any capacity.

**Gas Injectors** and Gas and Air Injector Mixers.

**Flame Arrestors.**

**Aerozone Air Heaters and Conditioners and Supertherm Radiant Heaters** for works and factory heating.

**Salamanders** and Automatic Bread Toasters for works canteens.

***Literature on the above range of products supplied on request***

We have a staff of fully qualified technical engineers at your disposal

*All the above appliances will operate on Butane, Propane, Natural Gas, Town's Gas or Producer Gas.*

50 YEARS CONTINUOUS SERVICE IN THE GAS INDUSTRY

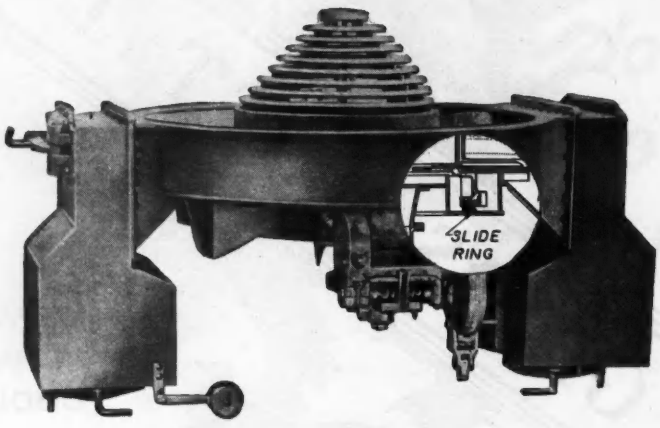
**RADIANT HEATING LTD**

*Detailed working drawings, burners and accessories supplied to customers who wish to build their own furnaces or ovens.*

**RADIANT WORKS, 9 BARNSBURY PARK, LONDON, N.1.** *Telephone* **NORTH 1677 (3 lines)**

Smee's

# SPECIAL FEATURES OF BALFOUR WATER GAS PLANT




## DRY SEALED ROTARY GRATE with slide ring support

The dry sealed rotary grate used in Balfour Water Gas Plant has many advantages over the water sealed type. Tests on the latter* show that it is possible for an appreciable amount of steam to condense during the run at the base of the generator. Blowing efficiency can also be reduced by evaporation from the seals. In the dry sealed grate surging of water is eliminated, and there is no danger of corrosion.

* *See King's Manual of Gas Manufacture* (*Vol. I*, 1948).

**NO WATER SEALS • HIGH OVERLOAD POSSIBLE**
**HIGH GASIFICATION EFFICIENCY**

*Our engineers will be pleased to discuss the advantages and application of Balfour Water Gas Plant.*

HENRY BALFOUR & CO. LTD.,
ARTILLERY HOUSE, WESTMINSTER, S.W.1.
*Phone:* ABBEY 3639. *Grams:* DURIFOUND, SOWEST, LONDON
*and* DURIE FOUNDRY, LEVEN, SCOTLAND. *Phone:* LEVEN 79.
*Grams:* FOUNDRY, LEVEN FIFE.

Balfour OF LEVEN

*Leaders in Gas Engineering for over a century and a quarter.*

MEMBERS OF THE BALFOUR GROUP OF COMPANIES.

**YOUR CUSTOMERS WILL BE GRATEFUL for the opportunity to see this finest achievement in gas cookers, the Raymond. Full-page advertisements are inviting them to call at your showrooms, so let the Raymond be ready to greet them.**

Look what you get in the RAYMOND
the most effective gas cooker ever produced for Britain
'Styled by Raymond Loewy, the world-famous industrial designer!
Its larger hotplate with interchangeable parts is finished in stainless, glass-smooth vitreous enamel, and all metal parts are stainless and rustproof.
Its larger grill is enclosed. The grill chamber is readily removable; it has rounded corners and is finished in vitreous enamel; cleaning is so easy
Its larger oven has removable sides, top, bottom and back, all finished in vitreous enamel. These shelves can't pull out accidentally, can't tip!
Here's automatic press-button lighting — and safety taps — for every burner. A safety device ensures that the oven lights only when the door is open.
Though it's a larger gas cooker, the Raymond saves floor space, for it fits right against the wall. Oven vents are just behind the hotplate — see above.
Smooth-turning taps give close control of cooking flames. There is thermostatic control of oven heat. Indeed, the Raymond is the very best in every way!
You are invited to view this beautiful, automatic and labour-saving gas cooker . . . the luxurious and efficient RAYMOND . . . at your local gas showrooms. It sells at 61½ guineas.
The Raymond gas cooker is available on hire purchase in most areas.
It is a product of General Gas Appliances Limited, of Audenshaw, Manchester.
Proprietors: Allied Ironfounders Limited, 28 Brook Street, London, W.1

**To the end of the year,** full-page advertisements like this one are appearing in all these magazines: Punch, Good Housekeeping, Sphere, Illustrated London News, House & Garden, Homes & Gardens, Ideal Home, Woman's Journal.

**THE RAYMOND GAS COOKER IS A PRODUCT OF GENERAL GAS APPLIANCES LTD., AUDENSHAW, MANCHESTER**

*Proprietors: Allied Ironfounders Ltd.*

AD Trade Mark

# EXHAUSTERS

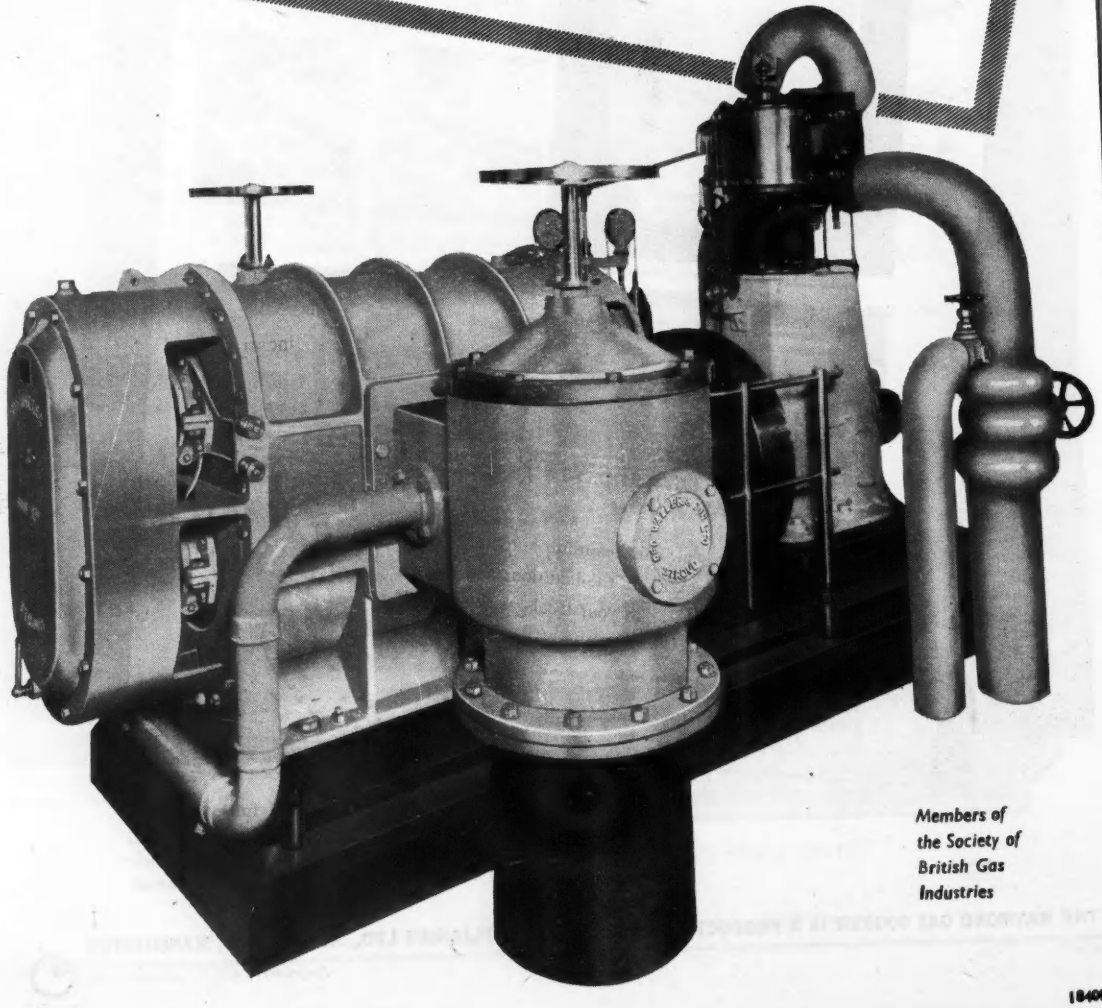
**Roots Type**

*Capacities up to One Million cubic feet per hour*

GEORGE **WALLER** AND SON LTD

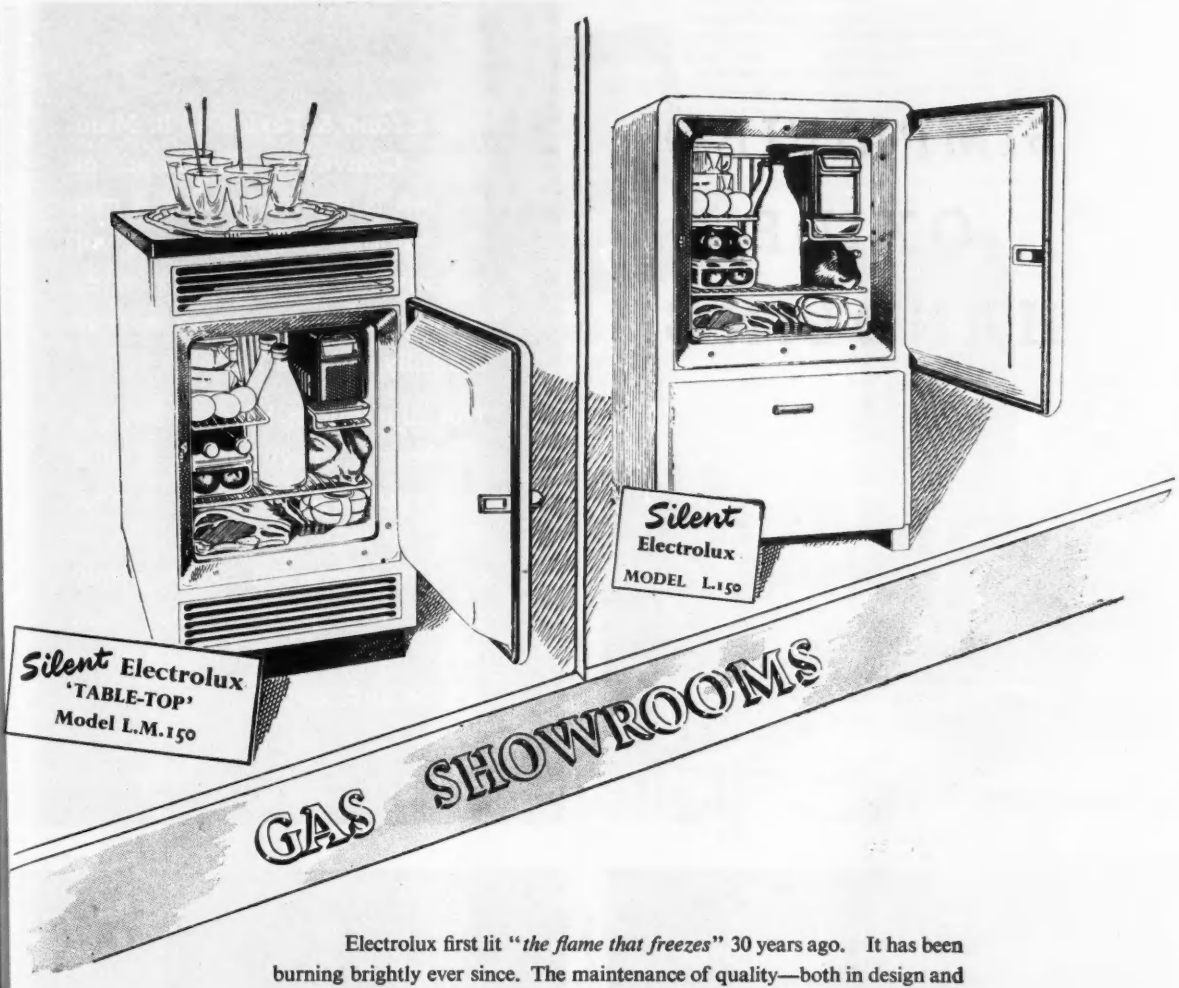
PHOENIX IRON WORKS · STROUD · GLOS

Telephone BRIMSCOMBE 2301/2



Members of the Society of British Gas Industries

18409




By Appointment
Refrigerator Makers
to the late King George VI

Electrolux first lit "*the flame that freezes*" 30 years ago. It has been burning brightly ever since. The maintenance of quality—both in design and construction—achieved an unequalled reputation for reliability and Electrolux *Silent* Gas Refrigerators became world famous. Today they incorporate all the advances and refinements evolved during 30 years of experience and constant research.

Your consumers will be glad to see that Electrolux Gas Refrigerators are now more freely available. 'Table-Top' Model L.M. 150 and Model L.150 have ample storage space for the family's perishable food. *Backed by the Electrolux 2-Year-Guarantee.*

By Appointment
Suction Cleaner and
Refrigerator Manufacturers
to H.M. Queen Mary

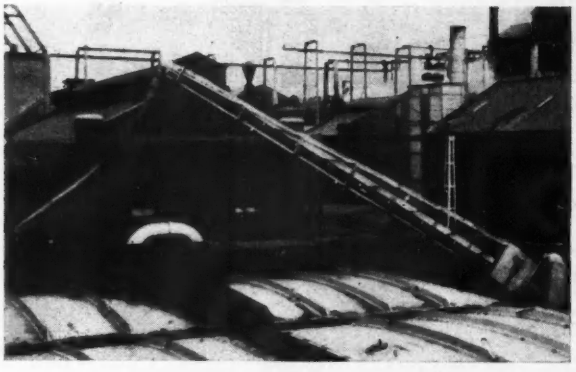
ELECTROLUX
THE FLAME THAT FREEZES

# Electrolux *Excels* in proved reliability

ELECTROLUX LTD · 153/5 REGENT STREET · LONDON · W.1. WORKS: LUTON · BEDFORDSHIRE

B

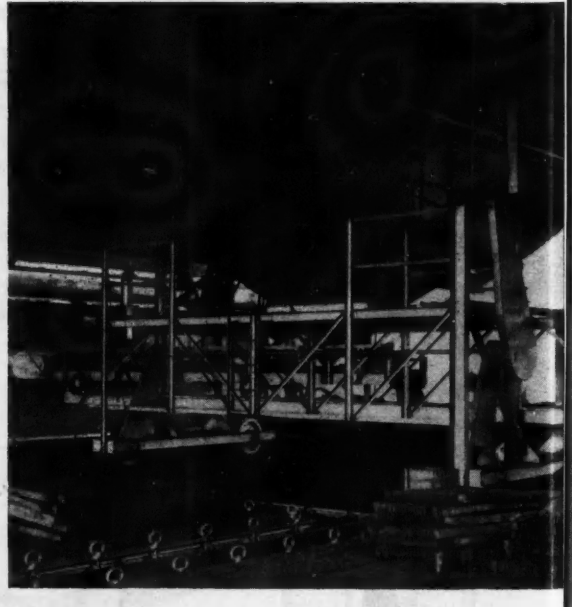
# SIMPLIFIED OXIDE HANDLING



The Crone & Taylor 40 ft. Mammoth Conveyor illustrated on the left is equipped with a canvas shoot. This machine will quickly and easily elevate oxide from ground level and spread it lightly into the boxes.

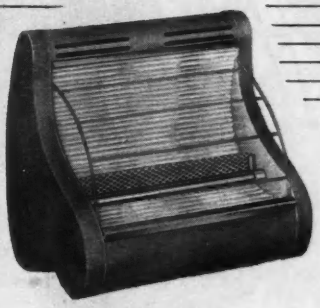
The illustration below shows a traversing reversible shuttle conveyor fed by an over-head skip hoist. This conveyor spreads prepared oxide lightly into every part of the box, resulting in an enormous saving of time and labour.

We have specialised for over 20 years in the manufacture of equipment for simple oxide handling. If you have an oxide handling problem, we will be pleased to investigate it, and make recommendations without obligation.



CRONE & TAYLOR LTD.
SUTTON OAK. ST. HELENS. LANCS.
Telephone: St. Helens 3397

CT 2687

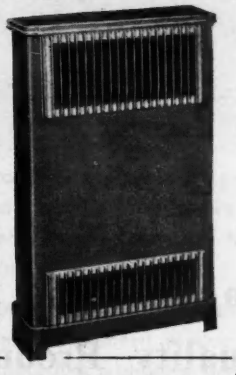


WARWICK'
5,000 B.Th.U. per hour.
The most efficient portable built. Gold finish.

# Designed for Efficiency and Economy

CONVECTOR TYPE 'B'
5,000 B.Th.U. per hour.
Amber glass panel at base. For Shops, Offices. and the Home. Bronze finish.

CONVECTOR TYPE 'A'
5,000 B.Th.U. per hour.
For Nursery, Hall, etc.
Bronze finish.



WINDSOR CONVECTOR
10,000 B.Th.U. per hour.
General purpose unit of fine design. Bronze finish. Gold Grilles.

FACTORY RADIATOR
15,000 B.Th.U. per hour.
For Factories, Workshops etc. Bronze finish.

CERTIFIED PERFORMANCE

SOLE MANUFACTURERS & DISTRIBUTORS

COWPER PENFOLD & CO. LTD

6 BASIL STREET · KNIGHTSBRIDGE · LONDON · SW3

TELEPHONES: KENSINGTON 3677-3678-3679

*Loading bay of new Dressler Tunnel Kiln, showing firebrick shapes being placed on trucks.*

## Background to a Quality Production

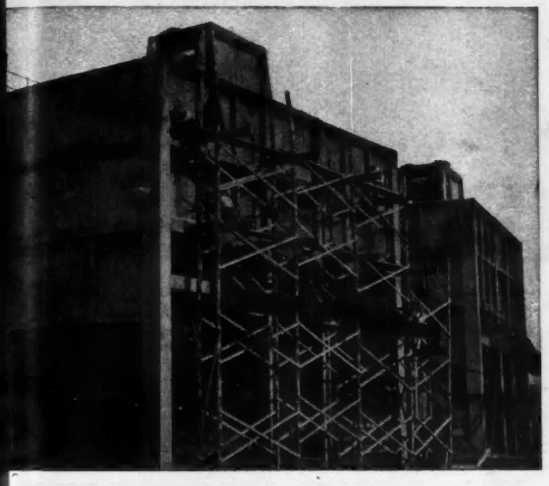
The development of high quality furnace lining materials for all sorts of industrial requirements has gone on at the Gibbons Works for over a century, providing a sound basis for the up-to-date methods of manufacture by which Gibbons Refractories are produced today.

H.T.1. · ALUMINOUS · SILICA · FIREBRICK · SILLIMANITE

# GIBBONS superior refractories

*Gibbons (Dudley) Ltd., Dibdale Works, Dudley, Worcs.*

# Gunite



*of the reinforced concrete structures reconditioned with Gunite for the City of Carlisle Gas Undertaking.*

**unite**—concrete applied by air pressure—as numerous applications where its great density and extreme adhesion have exceptional value.

**For repairing reinforced concrete** it has particular merit, as, due to the method of application, a uniform density and adherence is obtained whenever Gunite is applied

**For lining coal bunkers and steel chimneys** it possesses great resistance to corrosion and protects steel-work from the abrasive action of coal or coke.

*Handbook "GUNITE" sent on request*

**THE CONCRETE PROOFING CO., LTD.**

**100, VICTORIA STREET, S.W.1**

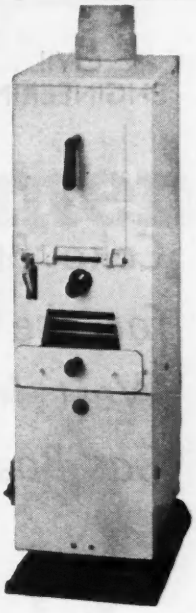
Telephone: Victoria 7877 & 6275

SUGG WESTMINSTER

# GAS-FIRED INCINERATORS

A very wide unfulfilled need exists for these efficient, economical, and clean-looking incinerators. Sugg incinerators are already installed in many hospitals, nursing homes and institutions, for the destruction of swabs, soiled dressings, etc. A still wider application is the destruction of sanitary towels in factories, business houses, stores, hotels, etc.

Sugg incinerators are designed for heavy use, and have firebrick lined fireboxes with cast iron bottom bars and crowns. Each model has a drilled bar burner, shielded to prevent blockage by falling ash, and is fitted with a disturber to prevent a mass of ash forming on the grate bars. An adjustable timing device controls the period of combustion which starts when the door is opened.



ABOVE:
Model 3700 for Hospitals —finished in grey/white mottled vitreous enamel.

BELOW:
Model 3706, finished in cream or white with polished aluminium door front. 3705, similar, is a wall model.

Write or 'phone for full details and prices.

**WM. SUGG & CO. LTD.,**

Chapter Street, Westminster, S.W.1 VICtoria: 3211

*See our permanent exhibit at the Building Centre, Store Street, Tottenham Court Road, W.C.1.*

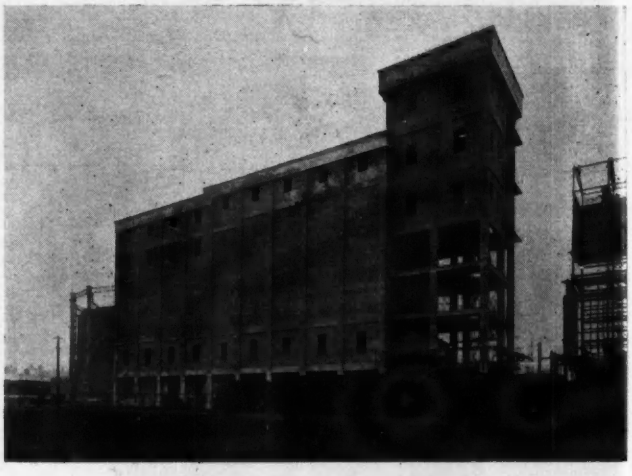
13

CIVIL ENGINEERING

# DOUGLAS

BUILDING

*Coke Bunkers for the West Midlands Gas Board*



*Messrs. Henry M. Hale and Partners, Structural Engineers.*

**REINFORCED AND PRESTRESSED CONCRETE**
**GAS MAINS RAILWAY SIDINGS ROADS ETC.**

ROBERT M. DOUGLAS (CONTRACTORS) LTD., 395 GEORGE ROAD, BIRMINGHAM, 23
and BRIDGE ROAD, WAUNARYLWYDD, SWANSEA

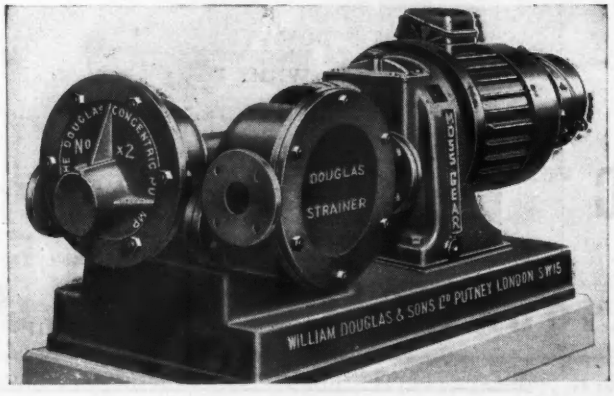
# SCRAP GAS METERS WANTED

**Top prices paid—Collection arranged from anywhere in U.K.**

*Sell to those best suited to deal with them.*

**Sell to — MITCHAM SMELTERS LIMITED**
Rometal Works, Red House Road,
Mitcham Road . . . CROYDON . . . Surrey.
Tel: THOrnton Heath 6101. (Private Branch Exchange).

*Truck Loads to our own private siding, Beddington Lane, Southern Region.*




# "THE DOUGLAS PUMP"

SHEWN FITTED WITH SUCTION PIPE LINE STRAINER, GIVING CHOICE OF TWO SUCTION LINES, PUMP & STRAINER STEAM HEATED. GOOD SUCTION. SLOW SPEED.

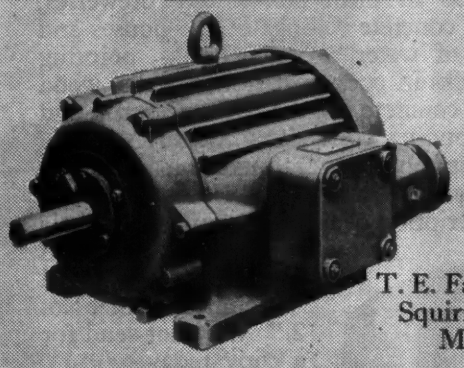
**WILLIAM DOUGLAS & SONS LTD.,**
**PUTNEY - - LONDON, S.W.15.**

FLP

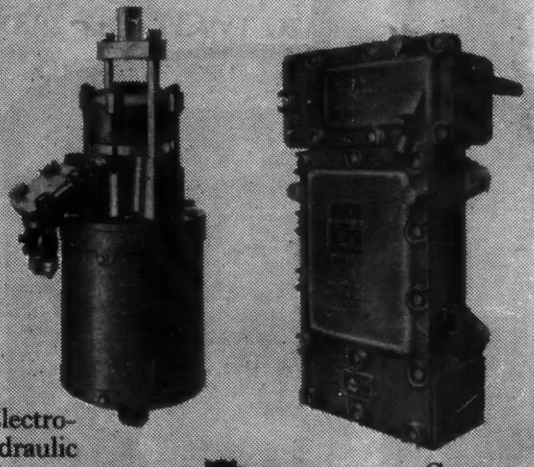
# Electric Equipment

by B T-H

INDUSTRIAL FLAMEPROOF

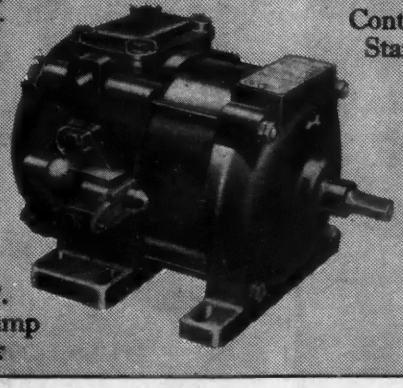


T. E. Fan-cooled Squirrel-cage Motor



Electro-hydraulic Thrustor

Contactor Starter



F.H.P. Petrol-pump Motor

IN many industrial processes from oil refining to paint-spraying, flameproof electric equipment is essential. The BTH Trade Mark in association with the FLP symbol distinguishes a wide range of electric equipment of proved performance—Buxton-certified for service in atmospheres where inflammable vapours or gases may be present.

Products include motors, from petrol pump sizes up to 1,000 h.p.; a wide range of control gear; thrustors; switchgear; and lighting equipment.—

SPECIFY BTH

THE

**BRITISH THOMSON-HOUSTON**

COMPANY LIMITED, RUGBY, ENGLAND

Member of the AEI group of companies

A 4294

# No end to its uses . .

WATERPROOFING concrete tanks, facing cork and asbestos insulation in refrigerated chambers in meat stores and breweries, protecting steel and concrete ceilings in dye-houses and interior surfaces of water softening tanks, pointing and sealing cracks in open cast-iron troughs, wood drying kilns, concrete buildings, fixing scrim and hessian, bonding cork slabs . . . we could go on indefinitely enumerating the many applications of "Bituplastic" Compounds. A description of these materials and their uses are neatly set out in an illustrated folder entitled "Technical Leaflet No. 2." Why not send for a copy today?

Manufactured in four Standard Grades, and obtainable in containers 7 lbs. and upwards.

Application by brush, spray or trowel according to Grade used and surface coated.

"BITUPLASTIC"
REG'D TRADE MARK

**COMPOUNDS**

H.75

**WAILES DOVE BITUMASTIC LTD · HEBBURN · Co. DURHAM**

# Protectoglo

## COMBUSTION SAFEGUARD SYSTEM

Protectoglo Flame Electrode and Control Relay

### *INSTANTANEOUS PROTECTION TO WORKERS AND PLANT USING GAS FIRED OVENS, FURNACES, ETC.*

Instantaneous fuel shut-off on flame failure . . . complete protection against internal faults . . . push-button, electric ignition . . . flexibility of design to permit incorporation of temperature or limit controls if required . . . these are the outstanding features of the Protectoglo combustion safeguard system installed on numerous gas-fired furnaces, ovens, lehrs, etc., throughout the country. Full details of an installation to suit your particular requirements will be sent on request.

*AVAILABLE FROM BRITISH PRODUCTION*

**HONEYWELL-BROWN LIMITED**

**WADSWORTH ROAD, PERIVALE, GREENFORD, MDDX.**

*Works & Scottish Sales Office*

**BLANTYRE, LANARK, SCOTLAND**

*Associated Companies: Amsterdam, Brussels, Paris, Stockholm, Zurich.*

## POWDER MONKEY!

. . . or technically "Aerator Tool" . . . handy at picking up soot, and ash from the top of retorts and elsewhere where they accumulate in quantity. Won't choke either and there is no cartage problem and no disturbance into the air. The soot or ash is conveyed straight to the B.V.C. portable exhauster plant where it is water cooled and delivered into a bin for disposal.

This is just one example of B.V.C.'s modern approach to the problems of industry, using pneumatic suction. May we send you full particulars of B.V.C. soot, ash and dust removal technique in connection with the Gas Industry?

**B.V.C** BRITISH VACUUM CLEANER — ***INDUSTRIAL VACUUM CLEANERS***

THE BRITISH VACUUM CLEANER & ENGINEERING CO. LTD
(DEPT 63) GOBLIN WORKS, LEATHERHEAD, SURREY

"WELL AND
TRULY LAID"

## MAINLAYING

Over 30 years' sound experience.

Skilled and gas-minded workmen.

Thousands of miles of mains have been laid by JEAVONS.

E · E · JEAVONS & CO · LTD

TIPTON · · · · STAFFS

'Phone; TIPTON 2161 (5 LINES) 'Grams; "PIPELINES" TIPTO

# INDEX TO 'JOURNAL' ADVERTISERS


A

| | PAGE |
|---|---|
| A.C.E. Machinery, Ltd. | |
| Abbott, Birks & Co., Ltd. | |
| Accurate Recording Instrument Co. | |
| Acme Wringers, Ltd. | |
| Aerogen Co., Ltd. | |
| Aerograph Co., Ltd. | |
| Alder & Mackay, Ltd. | 588 |
| Allan Taylor (Engineers) Ltd. | |
| Armco, Ltd., (Bundy Tubing Division) | |
| Ascot Gas Water Heaters, Ltd. | Cover 1 |
| Ascot Gas Water Heaters, Ltd. (F.A. Neat) | |
| Ashmore, Benson, Pease & Co. | |
| Ashworth & Parker, Ltd. | |
| Aspinall's (Paints), Ltd. | |
| Associated Lead Manufacturers, Ltd. | |
| Associated Lead Manufacturers, Ltd. (Rustodian) | |
| Automatic Telephone & Electric Co., Ltd. | |
| Automotive Products, Ltd. | |
| Averill, C. R., Ltd. | |

B

| | |
|---|---|
| Bailey, Sir W. H., & Co., Ltd. | |
| Bale & Church, Ltd. | S3 |
| Balfour, Henry, & Co., Ltd. | 546 |
| Begwaco Meters, Ltd. | |
| Bell's Asbestos & Engineering, Ltd. | |
| Benham & Sons, Ltd. | |
| Blakeley, Firth, Sons & Co., Ltd. | |
| Booth, John & Sons (Bolton), Ltd. | |
| Boydell, E., & Co., Ltd. | Cover IV |
| Bratt Colbran, Ltd. | |
| Bray, George, & Co., Ltd. | 536 |
| Bray, W. E., & Co., Ltd. | |
| Bright, Son & Co. (Clerkenwell), Ltd. | |
| Bristol's Instrument Co., Ltd. | |
| British Flint & Cerium Manufacturers, Ltd. | |
| British Furnaces, Ltd. | |
| British Gas Purifying Materials Co. | |
| British Industrial Products | |
| British Iron & Steel Federation | |
| British Oxygen Co., Ltd. | |
| British Rototherm Co., Ltd. | |
| British Thermostat Co., Ltd. | |
| British Thomson Houston, Ltd. | 555 |
| British Tyre and Rubber Co., Ltd. | |
| British Vacuum Cleaner & Engineering Co., Ltd. | 557 |
| Broadbent, Thomas, & Sons, Ltd. | |
| Brockhouse Heater Co., Ltd. | |
| Broom & Wade, Ltd. | |
| Brotherhood, Peter, Ltd. | |
| Brown, J., & Co., Ltd. | |
| Bugden, Thos., & Co. | |

C

| | |
|---|---|
| Cambridge Instrument Co., Ltd. | |
| Cannon (Holdings) Ltd. | |
| Carron Co. | |
| Cementation Co., Ltd. | 542 |
| Central Manufacturing & Trading Co. (Dudley) Ltd. | |
| Chaseside Engineering Co. Ltd. | |
| Chemical Engineering Wiltons Ltd. | |
| Chemical & Insulating Co., Ltd. | |
| Cinema-Television, Ltd. | 544 |
| Clapham Bros., Ltd. | |
| Clayton, Son & Co., Ltd. | 535 |
| Clifford Engineering Co., Ltd. | |
| Cochran & Co., Annan, Ltd. | |
| Cohen, George, Sons & Co., Ltd. | |
| Collins, Thomas, & Co., Ltd. | |
| Concrete Proofing Co., Ltd. | 553 |
| Consolidated Pneumatic Tool Co., Ltd. | |
| Cort, Robert & Son Ltd. | |
| Coventry Chromium Plating Co. Ltd. | |
| Cowper Penfold & Co., Ltd. | 551 |
| Cox & Danks, Ltd. | |
| Crane, Ltd. | S2 |
| Crone & Taylor, Ltd. | 550 |
| Crosby & Co., Ltd. | 545 |
| Crosslands (Rugeley) Ltd. | |
| Crossley Bros. | |
| Curtis, A. L. & Co. | |
| Cutler, Samuel, & Sons, Ltd. | 588 |

D

| | |
|---|---|
| Dale Reynolds & Co., Ltd. | |
| Davey, Paxman & Co., Ltd. | |
| De la Rue, Thomas, & Co., Ltd. (Potterton Gas Group) | |
| Demolition & Construction Co. Ltd. | |
| Dempster, R. & J., Ltd. | |
| Dempster, Robert, & Sons, Ltd. | |
| Derbyshire Silica Firebrick Co., Ltd. | 534 |
| Dexion Ltd. | |
| Diaphragm & General Leather Co., Ltd. | |
| Dick, R. & J., Ltd. | 542 |
| Donkin (The Bryan) Co., Ltd. | Cover II |
| Douglas, Robert M., (Contractors), Ltd. | 554 |
| Douglas, William, & Sons, Ltd. | 554 |
| Drakes, Ltd. | |
| Drew, H. B., Ltd. | |
| Dunlop & Ranken, Ltd. | |

E

| | |
|---|---|
| E.B. Refractory Cement Co., Ltd. | |
| Edgar, William, & Son, Ltd. | |
| Elcontrol Ltd. | |
| Electroflo Meters Co., Ltd. | |
| Electrolux Ltd | 549 |
| Elliott Bros. (London), Ltd. | |
| English Electric Co., Ltd. | |
| Ether, Ltd. | |
| Evershed & Vignoles, Ltd. | |
| Evode Ltd. | |
| Ewart Chainbelt Co., Ltd. | S3 |
| Ewart & Sons, Ltd. | |
| Expanded Metal Co., Ltd. | |

F

| | |
|---|---|
| Falk Stadelmann & Co., Ltd. | |
| Fibreglass, Ltd. | 538 |
| Flavel, S., & Co., Ltd. | |
| Fluxite, Ltd. | |
| Four Oaks Spraying Machine Co., Ltd. | |
| Fowler, John & Co., (Leeds) Ltd. | |
| Franki Compressed Pile Co., Ltd. | |
| Fraser & Chalmers, Engineering Works | |
| Fry's Metal Foundries, Ltd. | |
| Fyffe & Co., Ltd. | |

G

| | |
|---|---|
| Gas Chambers & Coke Ovens, Ltd. | |
| Gas Purification & Chemical, Ltd. | S3 |
| General Descaling Co., Ltd. | |
| General Electric Co. Ltd., | |
| General Gas Appliances, Ltd. | 547 |
| Gibbons Bros., Ltd. | |
| Gibbons (Dudley), Ltd. | 552 |
| Gibson, John & Son, Ltd. | |
| Glover, George, & Co., Ltd. | 533 |
| Glover, Thomas, & Co., Ltd. | 562 |
| Godfrey Sir George, & Partners (Industrial) Ltd. | |
| Goodall Clayton & Co., Ltd. | |
| Goodyear Mechanical Goods | |
| Grant & West, Ltd. | |
| Graphite Products, Ltd. | |
| Green E., & Son, Ltd. | |
| Green & Boulding, Ltd. | |
| Gunite Construction Co., Ltd. | |

H

| | |
|---|---|
| Hamilton, A. H., & Co., Ltd. | |
| Hardman & Holden, Ltd. | |
| Harris & Pearson, Ltd. | |
| Harris Engineering Co., Ltd. | |
| Harrisons (London), Ltd. | |
| Harvey, G. A., & Co. (London), Ltd. | |
| Hawkins, W. T. & Co. | |
| Heaths (Eccles), Ltd. | |
| Hewitt Construction Co., Ltd. | |
| Hickson's Timber Impregnation Co. (G.B.), Ltd. | |
| Hilmor, Ltd. | |
| Holden & Brooke, Ltd. | |
| Holmes, W. C., & Co., Ltd. | S5 |
| Honeywell-Brown, Ltd. | 557 |
| Horseley Bridge & Thomas Piggott, Ltd. | |
| Horstmann Gear Co., Ltd. | |
| Howden, James, & Co., Ltd. | |
| Hughes, F. A. & Co., Ltd. | |
| Humphreys & Glasgow, Ltd. | 560 |

I

| | |
|---|---|
| Ideal Boilers & Radiators, Ltd. | facing p. 573 |
| I.C.I. Ltd. (Metals Division) | |
| Ingham, John, & Sons, Ltd. | |
| International Combustion, Ltd. | |

J

| | |
|---|---|
| Jeavons, E. E., & Co., Ltd. | 558 |
| Jeavons Engineering Co. | 539 |
| Jenkins, W. J., & Co., Ltd. | |
| Johnson, C. H. (Machinery) Ltd. | |

K

| | |
|---|---|
| Keay, E. C. & J., Ltd | S1 |
| Keith Blackman, Ltd. | S6 |
| Kerr, John & Co., (M/C) Ltd. | |
| King, Geo. W Ltd. | |
| King, Walter, Ltd. | |
| Kings Patent Agency, Ltd. | |
| Kirk & Co. (Tubes), Ltd. | |
| Kirkham Hulett & Chandler, Ltd. | |
| Kleenoff Co. | |
| Klinger, Richard, Ltd | |

L

| | |
|---|---|
| Laidlaw, R., & Son (Edin.), Ltd. | |
| Lamont, James H., & Co., Ltd. | |
| Lancashire Dynamo & Crypto, Ltd. | |
| Lawler, Ayers & Co., Ltd. | |
| Le Bas Tube Co., Ltd. | |
| Leeds X.L. Fire Cement Co. | |
| Lionweld, Ltd. | |
| Lind, Peter, Ltd. | |

M

| | |
|---|---|
| Macpherson, Donald, & Co., Ltd. | |
| Magnetic Valve Co., Ltd. | |
| Main, R. & A., Ltd. | 584, 585 |
| Marco Conveyor & Engineering Co., Ltd. | |
| Master Gas Cookers Ltd. | |
| Mavor & Coulson, Ltd. | |
| Mechanical Handling | |
| Meltham Silica Fire Brick Co., Ltd. | |
| Mercol Products, Ltd. | |
| Messenger & Sons, Ltd. | |
| Meters, Ltd. | |
| Metropolitan Leather Co., Ltd. | |
| Milnes Meters, Ltd. | |
| Mitcham Smelters Ltd. | 554 |
| Mitchell, H., & Co. | |
| Moler Products, Ltd. | |
| Monk, A., & Co., Ltd. | |
| Morris Commercial Cars, Ltd. | |

N

| | |
|---|---|
| National Benzole Co., Ltd. | 580 |
| National Enamels, Ltd. | S2 |
| Newton Chambers & Co., Ltd. | 537 |
| Nu-Swift Ltd. | S3 |

O

| | |
|---|---|
| Olding, Jack & Co., Ltd. | |
| Orme, Evans & Co., Ltd. | |
| Oxley Engineering Co., Ltd. | 540 |

P

| | |
|---|---|
| Parkinson & Cowan (Gas Meters), Ltd. | 562 |
| Parkinson Stove Co., Ltd. | 583 |
| Pass, E. & Co., Ltd | |
| Peckett & Sons, Ltd. | |
| Peebles & Co., Ltd | |
| Peel, H. Ltd., | |
| Pegson, Ltd. | |
| Peri Controls, Ltd. | 561 |
| Plus Gas Co., Ltd. | |
| Power Gas Corporation, Ltd. | |
| Power Jacks Ltd. | |
| Powers-Samas Accounting Machines (Sales), Ltd. | |
| Pratt Engineering Co., | |
| Press, William, & Son, Ltd. | 541 |
| Pulsometer Engineering Co., Ltd. | |

R

| | |
|---|---|
| Radiant Heating, Ltd. | 545 |
| Radiation, Ltd. | 578, 579 |
| Rawlplug Co., Ltd. | 536 |
| Reavell & Co., Ltd. | S3 |
| Riley, A. J., & Son, Ltd. | |
| Roberts, R. E. & Sons, Ltd. | |
| Robinson, J. H. & Co., (Liverpool) Ltd. | |
| Royles, Ltd. | |
| Rozalex, Ltd. | |
| Russell, R., & Sons, Ltd. | S2 |

S

| | |
|---|---|
| Salter, T. E., Ltd. | |
| Saunders Valve Co. Ltd. | |
| Scottish Non-Ferrous Tube Industries, Ltd. | |
| Shannon Ltd. | |
| Siebe Gorman & Co., Ltd. | |
| Sigma Instrument Co., Ltd. | |
| Simon-Carves, Ltd. | |
| Simon, Richard, & Sons, Ltd. | |
| Sisson, W., & Co., Ltd. | S1 |
| Slingsby, W., & Co., Ltd. | |
| Smith Meters, Ltd. | |
| Smith, Thos. & Sons, (Rodley), Ltd. | |
| Spence, Peter & Sons Ltd. | |
| Spencer Bonecourt, Ltd. | |
| Sperryn & Co. Ltd. | 533 |
| Standard Furnace & Setting Co., Ltd. | |
| Stanton Ironwork Co., Ltd. | |
| Staveley Iron & Chemical Co., Ltd. | 543 |
| Stein, John G., & Co., Ltd. | |
| Stelcon (Industrial Floors) Ltd. | |
| Stewart & Gray, Ltd. | |
| Stewarts & Lloyds, Ltd. | |
| Stone, J. B., & Co, Ltd. | |
| Stoves, Ltd. | |
| Strachan & Henshaw, Ltd. | |
| Stringer Bros. | |
| Sugg, William, & Co., Ltd. | 553 |
| Summerson, Thos. & Sons, Ltd. | |
| Sutcliffe Speakman & Co., Ltd. | |
| Sutherland, A. G., Ltd. | |

T

| | |
|---|---|
| Taylor, F., & Sons, Ltd. | |
| Thomas & Bishop, Ltd. | |
| Thomas (Richard) & Baldwins, Ltd. | |
| Thompson, John, Conveyor Co. | |
| Thorp, Thomas, & Co., Ltd. | |
| Tully, Sons & Co., Ltd. | |
| Turners Asbestos Cement Co., Ltd. | |

U

| | |
|---|---|
| Underpressure Engineering Co., Ltd. | |
| United Kingdom Construction & Engineering Co., Ltd. | Cover II |

V

| | |
|---|---|
| Vale, Thomas, & Sons, Ltd. | |
| Visco Engineering Co., Ltd. | |
| Vulcan Stove Co., Ltd. | |

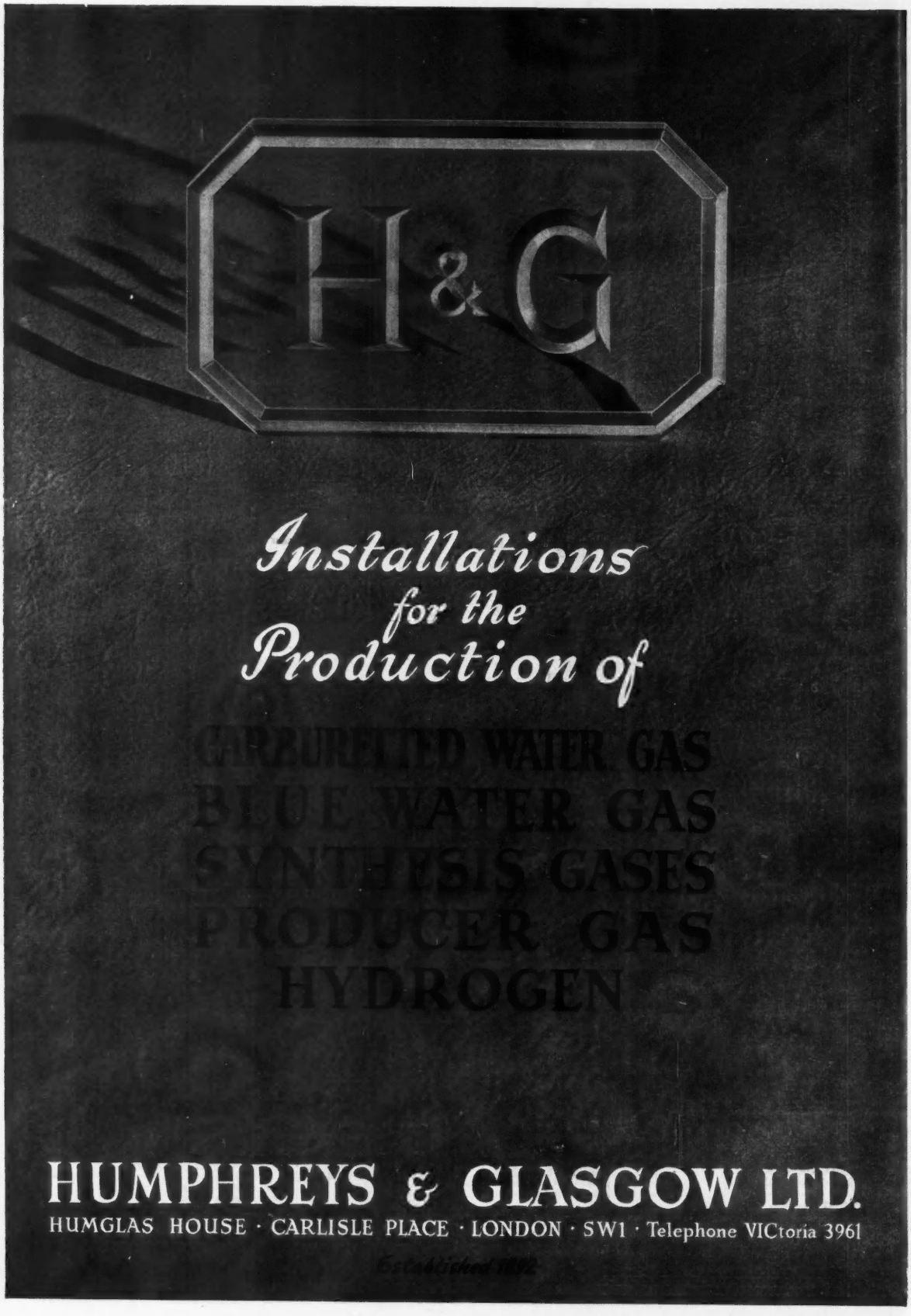
W

| | |
|---|---|
| W.D. (Sheeters), Ltd. | |
| Wailes Dove Bitumastic Ltd. | 556 |
| Wakefield, C. C., & Co., Ltd. | 586 |
| Wakelin, F. H., Ltd. | |
| Walker, C. & W., Ltd. | |
| Walker, Croaweller & Co., Ltd. | |
| Waller, George, & Son, Ltd. | 548 |
| Ward, Thos. W., Ltd. | 577 |
| Webster H. R. Ltd. | |
| Wellington Tube Works, Ltd. | |
| Wellman Smith Owen Engineering Corpn., Ltd. | |
| Wessex Industries (Poole) Ltd. | |
| West's Gas Improvement Co., Ltd. | Cover III |
| West Hunwick Silica & Firebrick Co., Ltd. | |
| West's Piling & Construction Co., | |
| Westwood & Wrights, Ltd. | |
| Whessoe, Ltd. | |
| Whitehouse, Wm., & Co., Ltd. | |
| Whittaker Hall & Co. (1929) Ltd. | |
| Wilkes, A. H., & Co., Ltd. | S6 |
| Willey & Co., Ltd. | |
| Williams, John E., Ltd. | |
| Williamson Cliff, Ltd. | |
| Wilson, George, Gas Meters, Ltd. | |
| Winn & Coales, Ltd. | |
| Woodall-Duckham Vertical Retort & Oven Construction Co. (1920), Ltd. | facing p. 572 |
| Wood, Hugh, & Co., Ltd. | |
| Wright, Alexander, & Co., Ltd. | |

Y

| | |
|---|---|
| Yorkshire Copper Works, Ltd. | |

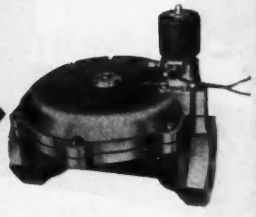
| | |
|---|---|
| Appointments Vacant | S3, S4 |
| Appointments Wanted | |
| Contracts Open | |
| Educational | |
| Financial | |
| Miscellaneous | |
| Notice | |
| Patents | |
| Plant For Sale & Wanted | S4 |
| Publications | |
| Repairs | |

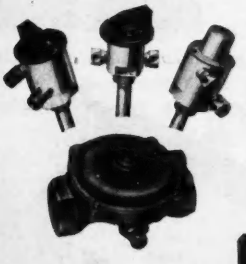

H & G
Installations
for the
Production of
CARBURETTED WATER GAS
BLUE WATER GAS
SYNTHESIS GASES
PRODUCER GAS
HYDROGEN
HUMPHREYS & GLASGOW LTD.
HUMGLAS HOUSE · CARLISLE PLACE · LONDON · SW1 · Telephone VICtoria 3961
Established 1902

EVERYTHING under CONTROL by PERL

AUTOMATIC PROTECTION for GAS

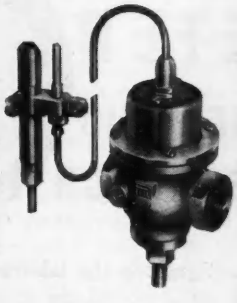
MAGNETIC GAS VALVE

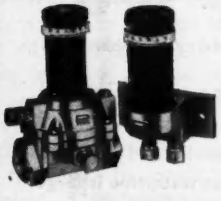




THERMOSTATS & RELAY VALVES

"THERMOPERL" PILOT SAFETY VALVE





ROOMSTATS

PROMPT DELIVERY

*Please ask for details of the full range of "PERL"*

AUTOMATIC TEMPERATURE & SAFETY CONTROLS

PERL CONTROLS LIMITED
672 FULHAM ROAD · LONDON · S.W.6
TELEPHONE · RENOWN 4049

# Gas Journal

*104th YEAR OF PUBLICATION*

**EDITOR: NORMAN S. SMITH, B.Sc. (Gas Eng.)**

11, BOLT COURT, FLEET ST., LONDON, E.C.4. Telephone: CENtral 2236-7 Telegrams: Gasking, Fleet.

*VOL. 271 NO. 4658 SEPTEMBER 10, 1952*

## CONTENTS

Page

**EDITORIAL COMMENT**

Nationalisation Under Review ... 563
Competition and Common Sense ... 564
Disquieting Evidence ... 564
Back to Selling ... 565
Productivity ... 565
Controversy ... 565
Instrumentation and Cremation ... 566

**BOOK REVIEW**

Fan Engineering ... 566

**NEWS OF CURRENT EVENTS**

Personal ... 566
Diary ... 566
Gas in the People's Houses ... 567
Beside the Seaside ... 567
Combustion Engineering Association ... 567
Convector Grates in Harlow Houses ... 567
Removal of Pyrites from Coal ... 587
Gas at Territorial Army Centre ... 590

**CONSULTATIVE COUNCILS**

South Eastern: Partial Closing of Showroom Justified ... 568
East Midlands: Board Undercuts Traders ... 568

**FEATURE ARTICLE**

Gas Industry in France: A Selection from the French Technical Press. By Ashton ... 569

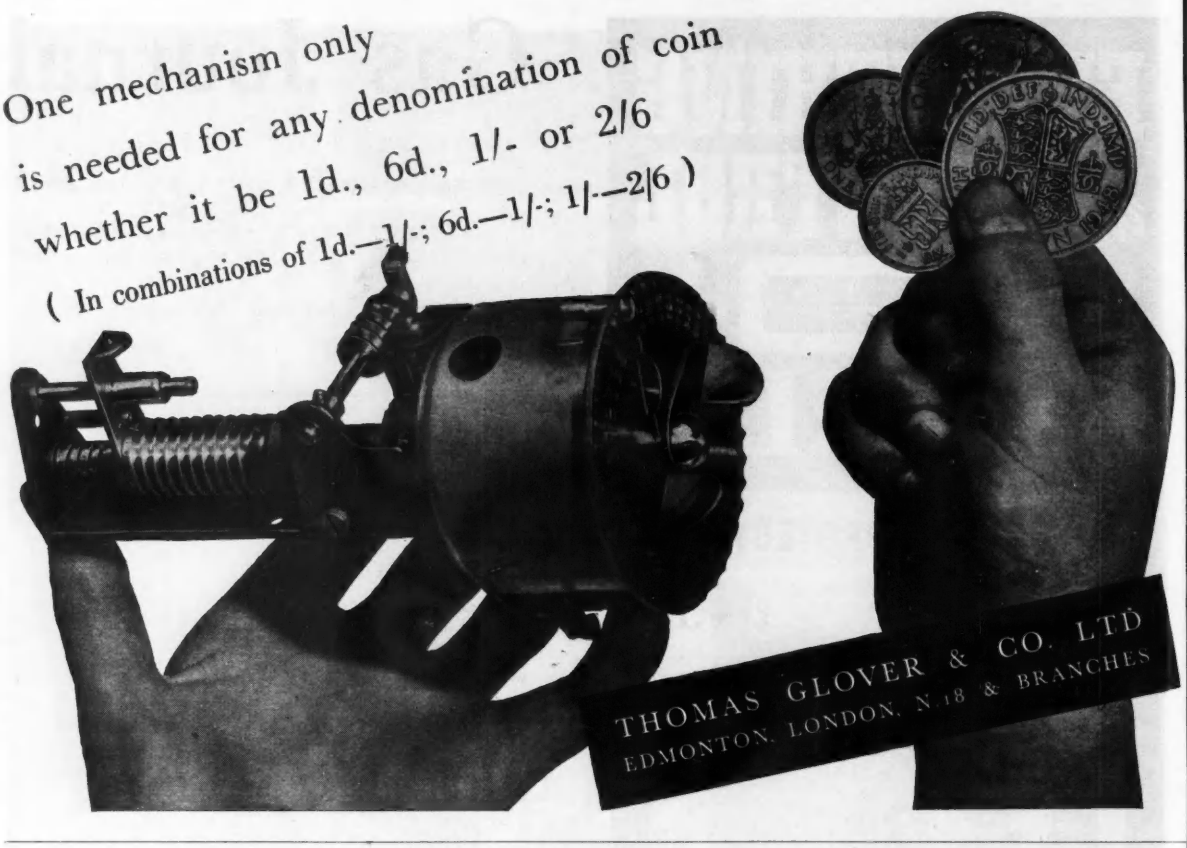
**TECHNICAL RECORD**

Industrial Gas Supply and Utilisation. By F. Dickinson, Divisional Industrial Gas Engineer, Sheffield and Rotherham Division, East Midlands Gas Board ... 571
Education and Training. A Report by the Institution of Gas Engineers to the 5th International Gas Conference, Brussels ... 575
Research in a Changing World. By H. H. Cuthrell, President, Brooklyn Union Gas Company ... 589

*Subscription Rates: Home and Empire 52/-; Foreign 60/-*

*Full Publishers' Notice: See Page S3, Sept. 3, 1952*

Gas Journal . . . . Walter King Ltd.


One mechanism only
is needed for any denomination of coin
whether it be 1d., 6d., 1/- or 2/6
( In combinations of 1d.—1/-; 6d.—1/-; 1/-—2/6 )
THOMAS GLOVER & CO. LTD
EDMONTON, LONDON, N.18 & BRANCHES

A NEW LABORATORY TEST METER

for use in ENGINEERING, SCIENTIFIC AND MEDICAL RESEARCH

**This precision built instrument, for the measurement of gases in the laboratory, is clean and modern in appearance and has been designed for extreme accuracy hitherto unobtainable.**

- **No variation of cross-sectional area of the compartments. Fractions of a revolution pass volumes of gas directly proportional to the amount of turning.**
- **Complete elimination of 'paddle' action owing to partitions being perpendicular to the surface of the water.**
- **Easily accessible for cleaning and servicing.**
- **Sectional area of case at waterline is large in relation to outlet chamber of drum, giving high degree of accuracy over wide range of speeds.**
- **All components governing accuracy are mounted to a common datum.**

***Write for full particulars to:***

**PARKINSON & COWAN (GAS METERS) LTD**

ENGINEERING DIVISION, DEPT. Q. COTTAGE LANE WORKS · CITY ROAD · LONDON · E.C.1
PHONE: CLERKENWELL 1766

T.M.1

# GAS JOURNAL

VOL. 271. No. 4658 104TH YEAR SEPTEMBER 10, 1952

## NATIONALISATION UNDER REVIEW

THE third of a series of Political Discussion Pamphlets which the Labour Party is issuing has seen the light of day. Bearing the title 'Problems of Public Ownership,' it has been written by Ernest Davies, Labour Member; it is not an 'official' policy statement but is intended solely as a basis for discussion; it is, of course, coloured with Socialist thinking, and though, as it seems to us, a sort of regretful acknowledgment of the apparent shortcomings of nationalisation in practice it suggests that the Labour Party should be given a blank cheque to nationalise any industry if it considers it to be, in that vague phrase, 'in the national interest.' We ourselves do not gain very much from this pamphlet, which is far too naive to be constructive. We are not, however, going to enter into any political argument. Nationalisation of the fuel industries was bound to take place irrespective of Party; it was the only possible key to effective co-ordination of fuel and energy supply. Between the fuel industries we have reached but little co-ordination as yet, but the possibilities are there; and nationalisation is in its infancy and it is obvious that all is not perfect in the sphere of nationalisation. There is a great deal of humbug in it and far too much window-dressing. Particularising, relationships in the personnel of the gas-industry are not what they might be in a country which is hardly seeking to face circumstance squarely and to work full-out. In some respects there has been a slackening of enthusiasm—indeed, a failure to grasp realities—and when Mr. Davies talks about the 'lack of drive' of some private industry it makes us open our eyes in genuine wonderment. Where is this 'drive' in the nationalised gas industry? To what extent are those working in the industry numbed by security of tenure of office? To what extent, directly as a result of nationalisation, is their sense of urgency weakened and their imagination and fervour dimmed? There are so many people in such peculiar jobs.

Of course there must be evolution and the holding of ideals is to be commended, but we ask simply whether, so far, nationalisation has resulted in speedier business activity in the gas industry, quicker response to the immediate needs of the day, sharper perception of current trends. We very much doubt it. Statements on common or garden policy (when such policy is formulated) are guarded as though they were international secrets of the greatest moment; and on occasion it seems to us that some of those serving the industry are wandering around in a realm of appeasement, not quite sure in their own minds of the jobs which, lack-lustre, they hold down. And we often ask ourselves what the industry would accomplish were it not for the backing of private enterprise. Yet how carefully, alas to the cause of progress and efficiency, has private enterprise to step to avoid the corns of those, highly placed, wearing nationalisation insignia.

There is such an abundance of froth amid the talk about the virtues of nationalisation, as though an Act of Parliament in 1948 could have changed the human foibles of gas engineers, stokers, fitters, and syphon pumpers. Towards an ideal? We are not lacking in hope but we are sometimes surprised at the gravity with which those serving the gas industry cloak the most ordinary everyday actions. It would be difficult, for example, to assess the worth of the gas consultative councils in the gas industry, yet how gravely they attack their work—work of such import that it is often deemed expedient to conduct it behind closed doors. Mr. Davies has faith in their work but maintains that the present need is to publicise to greater effect the very existence of these councils, which have been criticised as acting as the tools of management rather than the servants of the consumer.

Through nationalisation the gas industry and those working in it have been brought more into the limelight

of public criticism and there remains the danger—a very real danger—that the boards will not be able to free themselves from party political interference. But, as far as the fuel industries are concerned, nationalisation has come to stay, and it is certainly unfortunate that its advent was at a time of increasing financial difficulties on the national scale. There has been a lengthy time lag between the rapid rise in costs and the realisation of the economies which can and should result from unification, and the consumer of gas cannot expect to be exempt from paying charges that cover the cost of production. In the country as a whole the price of gas in December, 1951, was 60% to 80% higher than in 1938, but this increase is much below the general increase in prices over the period; and we believe there has been a general improvement in economy, efficiency, and service to gas users and that this improvement will gain momentum as the several schemes of integration throughout the country get under way. Overall, however, the progress which the industry will achieve will depend on the spirit of work, enterprise, and co-operation evinced by its individual members. We do not attempt to answer the question whether nationalisation will act as a catalyst to this end.

## COMPETITION AND COMMON SENSE

ALTHOUGH since nationalisation the gas industry has made considerable progress, considered financially it cannot yet be said to be wholly a 'going concern.' Increases in sales and savings effected in manufacture have been shadowed by the remorseless rise in costs. With over half the area boards showing a profit in their second report and others showing every sign of extricating themselves from their initial handicaps, the future for the economic stability of the industry *appeared* to be assured. We use the past tense because in the last few months serious changes have threatened to spoil the picture, and, if unchecked, deflect the upward curve of the industry's trading.

In marked contrast to the conditions which have obtained in recent years, the threat comes not only from the rise in costs of coal, transport, labour, and the rest; it comes also from reduced spending by the public. The situation is somewhat ludicrous: The gas industry, like its chief competitor, the electricity industry, relies for much of its success upon wresting business from the other. Particularly on the domestic front the two are fundamentally in opposition. If one succeeds beyond a certain point, thereby achieving a really handsome profit, the other suffers a loss. It is in the country's interests, therefore, that both industries should progress roughly in proportion, each relying for its expansion upon the gradual growth of demand. What is now happening is that the demand, both for gas and electricity, is not maintaining its usual growth. Clearly then the two industries cannot continue to expand at the former rate. If one does so, the other suffers. But at the moment *both* are suffering, because both are prevented from indulging in that kind of promotional activity calculated to build demand up again, or at least stem its present fall. And in addition to the current ban on promotional publicity there is the added aggravation of purchase tax.

Clearly something must be done. But before we turn to remedies, here are some facts and figures. The information is admittedly patchy and it deals more fully with electricity than gas, but most of these points may be taken as common to both industries. Of the two the gas industry is the more secretive—why it would be difficult to say—and so far only the North Western Gas Board has revealed how declining demand for gas and coke may affect its economics. Coal carbonised by the Board during the year ended June 29, was up 2% on the previous year, but the quantity carbonised in June, 1952, was 2% down compared with June, 1951. The Board states that its output was running higher than last year up to the middle of March, 1952, when it began to fall below last year's level. Expansion of gas sales which has been proceeding at the rate of about 4½% per annum is not now being maintained, the slowing down becoming noticeable in the second half of 1951, and becoming more marked since March of this year. Coke sales for the year were nearly 13% down and June sales were about 30% down compared with sales in June, 1951. The Board attributes this fall in sales primarily to the recent recession in industrial activity in the north western area.

## DISQUIETING EVIDENCE

A RECENT article in the *Electrical Times* suggests that the rise in sales to be expected in a healthy developing supply industry over any 12 months is between 8% and 10%. This has not been achieved since the year ended November, and the two electricity boards with the highest percentages, the Southern (8.8%) and South Wales (5.4%) have both had within their areas particularly large industrial projects—the Fawley oil refinery and the Margam steel works. Apart from this there would appear to be little significant difference between the behaviour of industrial and non-industrial loads. It appears, however, that from the study of the records of a number of area boards, for the first half of this year the maximum demand in a given month has usually shown a greater increase than the units sold; this means that the load factor of the system is decreasing, another characteristic of the recession in electricity sales that is having a financially disadvantageous effect.

Sales of appliances show an even greater decline. Electric cooker production in June was less than half last year's average, and water heaters were little better. Sales of electrical appliances handled by B.E.A. indicate an overall drop of 1½% in hire purchase sales of goods covered by the restriction Order, but the Authority's hire purchase terms already approximated those of the February Order. Sales of gas appliances included in the Order have also shown a serious decline since February, although it appears that sales of cookers, which are excluded from the Order, have shown little change.

## BACK TO SELLING

THERE are, we suggest, a number of partial solutions to this problem, but one is obvious—we must start selling again, and as quickly as possible. As we see it, the danger lies not so much in the present restrictions—for they must surely be lifted before very long—but in our industry's ability to sell. We are in competition with much more than electricity—makers of furniture, television, bicycles, to name only a few, are all jockeying for position to divert the narrowing stream of public expenditure. For the consumer the choice may be between a new cooker and going away on holiday next year; only salesmanship may tip the balance in favour of gas.

It is now 13 years since gas was really sold. Post-war activities may be discounted on the grounds that the industry only met the demand; it did not create it. Many of the younger men in our sales force today have never really sold anything; they have been mere midwives in a sale which simply had to come. Selling needs practice. Without it the salesman grows rusty and sometimes even his ambition fades. This dreadful inertia attacked both the gas and electricity industries simultaneously and both have suffered equally. What is now plain is that the industry which recovers its selling ability first will come out on top.

But we must remember one thing more. Although gas and electricity may revert to a pre-war intensity of selling, there will be a new factor and we would do well to face it. The electric cooker which now tempts the housewife's eye has changed more than its gas counterpart. Some of the criticisms formerly levelled at the electric appliances no longer apply; it is now faster and more economical. And that 'has been,' the solid fuel cooker, has made astonishing strides and has become so clean, versatile, and economical that its sphere of popularity is no longer limited to the rural areas. Solid fuel fires, too, have earned for themselves a new lease of life. The new solid fuel appliances do not necessarily burn coke—indeed, some owners have changed to other fuels believing the supply of coke to be unreliable.

Thus we are in a cruel world, and the winds of competition will blow ever more keen. *If* we move fast, *if* we reorganise and train our sales forces, and *if* we can gear promotional publicity to the new standards required, we have no doubt that the enviable prestige of gas will be maintained. But if we fail in any one of these, those sales figures will keep on going down. And it will be many a long day before the public's spending power reaches the level of the past six years.

---

### *PRODUCTIVITY*

THE Anglo-American Council on Productivity had been in existence over 3½ years when the U.S. and U.K. sections held their fifth and last joint session in May of this year. At that time a general assessment of its work was made available to the public. Fuller details of its operations and methods, and the results achieved, are set out in the 'Final Report of the Council,' published this week. 'We believe,' it is stated 'that one of the most important benefits of the Council's work lies in the improvement of the climate of opinion about productivity.' But a change of such a nature is incapable of short-term accomplishment, and it is made clear that the full harvest of the programme is still to be gathered. Work will therefore continue to be pressed forward by the U.K. Section of the Council until it can be readily absorbed into that of the British Productivity Council, shortly to be established. The formation of a continuing organisation in America is also being considered in order to maintain liaison with the British Productivity Council. The facilities provided for team visits to the United States under the Economic Co-operation Administration Technical Aid Programme will still be open through its successor, the Mutual Security Agency, under somewhat different conditions, and will continue to be handled from the offices of the U.K. Section in London. The report sets out, in four chapters, a documented review of what has already been accomplished. The total cost is given as approximately £844,500, of which some £320,400 represented sterling expenditure and £524,100 ($1,467,480) was met by the U.S. Section. Of the total U.K. expenses, almost £180,000 was met directly out of a grant-in-aid from the U.K. Treasury and contributions from the British Employers' Confederation, the Federation of British Industries, and the Trades' Union Congress (constituent bodies of the A.A.C.P.). This grant-in-aid was charged, with the concurrence of E.C.A., against the counterpart fund—*i.e.*, the sterling receipts in payment for goods supplied under Marshall Aid. No less than £141,000 has also been contributed by British industries directly concerned in sending teams to the United States.

### *CONTROVERSY*

SINCE Sir John Hacking discoursed on the relative thermal efficiencies of gas and electricity at this year's annual luncheon of the Institute of Fuel there has been a volume of correspondence on the subject in the national Press, notably in *The Times* and in the *Financial Times*. It may be recalled that he gave an efficiency of 19% for electricity delivered to the consumer and, by faulty reasoning, concluded that the overall efficiency of the gas fire, at 19%, was the same as that of the electric fire. The *Financial Times* recently published two special articles on 'The Case for Electricity,' by the President of the British Electrical Development Association, Dr. Percy Dunsheath, who reiterated the arguments of Sir John Hacking in answer to the charge that electric heating is inefficient compared with heating by coal, coke, and gas. None of the arguments can alter the broad conception that, on an average, every two tons of coal processed at a gasworks these days produces about 150 therms of gas and a ton of coke for sale. If this coke did not go into the solid fuel market it would have to be replaced by mining at least an extra ton of coal. In all heating loads, heating by gas requires roughly half the coal needed for heating by electricity. And this is only one angle of the problem. The series 'Re-thinking Our Future,' which is being heavily featured in the *Observer*, included in the issue of August 31 an article on 'Making the Best Use of Coal.' That article comes straight to the point: 'British people, to a degree unknown in any other country, have developed the habit of using thermal electricity for the crude job of heating—space heating, water heating, and cooking . . . . Everybody, except the electricity industry itself, agrees that this is a highly questionable use of resources.' The country needs more electricity, but not for the performance of crude heating jobs.

### *INSTRUMENTATION AND CREMATION*

THE reputation of gas as a flexible and efficient fuel rests to a large extent upon the skill and knowledge of the operator, and the only sure way of overcoming a lack of skilled operation is by entrusting control to mechanical and instrumental aids. This, we think, was the underlying theme of Mr. A. Higgs' remarks at the opening session of the Cremation Society's recent annual conference. As Industrial Engineer of the North Eastern Gas Board, representing the Industrial Gas Development Committee on a 'panel of experts,' Mr. Higgs was clearly concerned with imparting helpful advice to his listeners, enabling them to obtain the utmost satisfaction from the operation of the gas cremators under their control. After enumerating the objectives of the Society and some of the ways in which gas was helping to achieve them, Mr. Higgs dealt briefly with the value of regeneration and recuperation and it was from this springboard that he reached what we assume to be the real kernel of his message. Suggesting that from the aspect of achieving maximum speed and efficiency of general operation the Society would derive advantage from the wider use of instrumentation, Mr. Higgs explained that what he had in mind was the use of the magnetic-oxygen indicating type of equipment for the automatic control of the air supply throughout the cremation cycle. This would ensure the maintenance of a fixed excess of air in the waste gases, and should be most beneficial in avoiding smoke emission —provided, of course, that the required volume of air was available to the furnace. In the absence of automatic control, said Mr. Higgs, however well designed the cremator might be much depended on the skill of the operator and it seemed to him highly desirable that cremator operatives should have some training in fuel technology. He thought the Society would derive great benefit from arranging a course of instruction of this nature. We agree—it would. But might not the invitation come from the gas industry? It seems to us that this is a small service we might easily perform for the cremation practitioners which would have far-reaching results.

## Personal

**Mr. T. R. Howitt,** formerly manager of the screening department of Pegsons, Ltd., Coalville, recently terminated his connection with that firm. He has joined the staff of W. J. Jenkins & Co., Ltd., of Retford, Notts.

◇ ◇ ◇

**Miss Jessie Frith,** O.B.E., has been appointed General Secretary to the Women's Gas Federation, and takes up her new work on October 1. Miss Frith comes to the Federation from the Girl Guides Association, where she has been General Secretary for the past five years. Previously she served for over six years in the W.R.N.S., rising to the high rank of Superintendent (equivalent to the Royal Naval Captain). She went to the Middle East at the height of the war in charge of the first contingent of W.R.N.S., and spent two-and-a-half years as senior W.R.N.S. officer. Her pre-war training included a domestic science course.

## Diary

**Sept. 11.—Scottish Association of Gas Managers:** Annual General Meeting, Barrfields Pavilion, Largs. (Golf and bowling competitions September 10; Wemyss Bay-Kyles of Bute excursion September 12).

**Sept. 15.—Eastern G.C.C.:** Connaught Rooms, Kingsway, W.C.2, 2 p.m.

**Sept. 15-19.—Association of Public Lighting Engineers:** Annual Meeting and Exhibition, Harrogate. Exhibition of public lighting equipment, Gas Council exhibit, Stand No. 9.

**Sept. 16.—Irish Association of Gas Managers.** Annual Meeting, Londonderry. (For programme see *Journal* of July 30, p. 237.)

**Sept. 17.—Wales and Monmouthshire Section, I.G.E.:** Third Annual General Meeting, Ruthin.

**Sept. 25.—North Thames G.C.C.:** Westminster City Hall, Charing Cross Road, W.C.2, 2.30 p.m.

**Sept. 26.—North of England Section, I.G.E.:** Meeting at Newcastle-upon-Tyne. Paper by K. E. Brown, 2.15 p.m.

**Sept. 26.—Manchester and District Section, I.G.E.:** Visit to Robert Dempster and Sons Ltd., Rose Mount Ironworks, Elland, Yorks.

**Sept. 27.—Eastern Juniors:** Meeting, Great Yarmouth.

**Sept. 29.—West Midlands G.C.C.:** Queen's Hotel, Birmingham, 2.30 p.m.

**Sept. 30.—Manchester District Juniors:** Extraordinary General Meeting, Manchester, 6.30 p.m.

**Sept. 30.—Wales Juniors (North):** Visit to Coal Washing Plant at Gresford Colliery, 2.30 p.m.

**Oct. 1.—Institution of Heating and Ventilating Engineers:** 'Industrial Radiant Heating,' F. R. L. White, Vice-President, at the Institution of Mechanical Engineers, Storey's Gate, S.W.1, 6 p.m.

**Oct. 4.—Yorkshire Juniors:** Annual General Meeting, Leeds.

**Oct. 4.—Scottish Juniors (Eastern District):** Meeting. Presidential Address by T. R. Cameron.

**Oct. 7.—Midland Juniors:** Meeting. Presidential Address by D. J. Ward.

**Oct. 8.—South Western Section, I.G.E.:** Annual General Meeting, Taunton. Paper by T. H. Pardoe.

**Oct. 10.—London and Southern Juniors:** Meeting. Presidential Address by C. D. Shann.

**Oct. 11.—Manchester Juniors:** Annual General Meeting, Blackpool. Presidential Address of A. K. Howell.

**Oct. 17.—Midland Section, I.G.E.:** Visit to Four Ashes works of Midland Tar Distillers.

**Oct. 21.—Midland Juniors:** Meeting. Paper by C. P. Astbury.

**Oct. 21.—London and Southern Section, I.G.E.:** Annual General Meeting, London.

## FAN ENGINEERING*

WITH the increasing use of fans all over the world frequent requests have been made for a practical guide to the basic principles of fan engineering. Most publications on air conditioning, for which the majority of fans are used, all too often dismiss the subject of fans in a brief chapter. Relatively few books have been written specifically on fan engineering, and those that are available require a high standard of knowledge for quick assimilation of the facts presented. In the present book an endeavour has been made to present the basic principles of the operation and selection of fans in a concise and easily readable form.

It deals in simple, largely non-technical, language with some of the problems of fan engineering, and should assist the engineer who purchases and instals fans and allied equipment to escape some of the more avoidable pitfalls. The co-Editors are W. C. Osborne, B.SC., ENG. (London), and C. G. Turner, D.A.A.

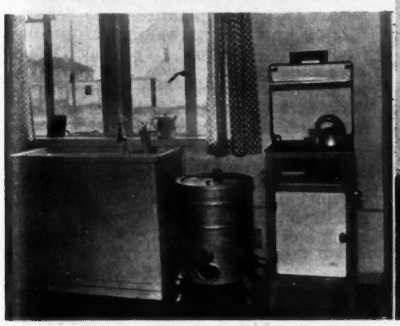
* 'Woods Practical Guide to Fan Engineering': published by Woods of Colchester, Ltd. (an associate Company of the General Electric Co., Ltd.), price 10s. 6d. net.

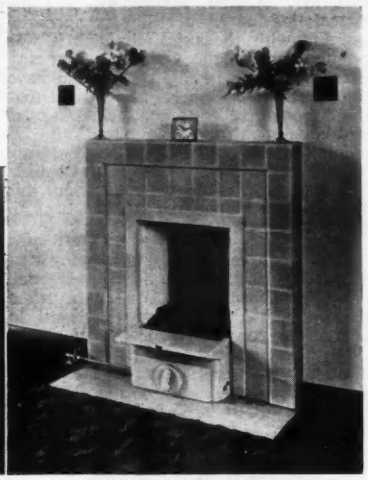
## Gas in the People's Houses

ALL over the country the drive to provide homes as quickly and economically as possible is being undertaken by local authorities working in close collaboration with the Ministry of Housing, and included in these schemes are a number of 'People's Houses.' Public services are playing a part in equipping these houses with cooking and heating appliances, and our illustrations show examples of gas and coke equipment which are being installed by some of the gas boards in housing estates in their areas.

On the left is a kitchen in one of the houses at Newton Aycliffe, near Darlington, showing a gas wash boiler and gas cooker. Two, three, and four bedroom houses form part of the complete new town which is in the course of building. In addition provision is being made for shops, schools, flats and a civic centre. Tenants have freedom of choice for cooking, and of the 395 dwellings occupied to date 315 have chosen gas for cooking. The town will provide accommodation for those working on the Aycliffe Trading Estate which is adjacent.

Illustrated below is a gas-ignited coke fire providing domestic hot water and space heating for the living room in a three bedroom People's House at Canterbury. Kitchen equipment includes a gas cooker and wash boiler. Of the first 14 houses, which were erected in three months, 13 of the households are using gas.





## BESIDE THE SEASIDE

*AN unusual site for a gas showroom is that depicted in our photograph above. It is the travelling showroom operated by the North Wales undertakings on the seafront at Pwllheli, where it attracted remarkable attendances at a series of cooking demonstrations. The two home service advisers who ran the demonstrations were each presented with a small gift at the conclusion of the final session as a token of appreciation. The Wales Gas Board's Manager at Pwllheli, Mr. W. N. Thomas, also received numerous letters of appreciation from gas consumers.*

---

**The British Industries Fair** for 'Coronation Year' will be held from April 27 to May 8. Publicity material to be sent out will include 400,000 booklets, 70,000 posters, 40,000 showcards, and 130,000 letters to known buyers in 60 countries.

---

## Combustion Engineering Association

The Combustion Engineering Association has arranged a conference on the operation and maintenance of industrial boiler plant (covering both shell and water-tube boilers using solid, liquid, and gaseous fuel). The conference will be held on Tuesday and Wednesday, October 21 and 22, at the Grand Hotel, Harrogate.

The titles of the sessions will be 'The Boiler Plant, Its Control and Maintenance,' 'The Men in the Boiler House,' 'The Utilisation of Waste Heat,' and 'Firing.'

Further particulars may be had on application to the Director, the Combustion Engineering Association, 6, Duke Street, St. James's, London, S.W.1.

---

**The Use of Copper** in building, for roofing and for water, gas, and sanitation services, in all parts of the country, has resulted in increased demands for lectures and demonstrations by the Copper Development Association Building Engineer, Dr. E. Carr, and his assistants. These popular lectures can be illustrated with sound films or lantern slides where projection facilities are available. Those wishing to take advantage of this C.D.A. service, which is free, should make early application to the Copper Development Association, Kendals Hall, Radlett, Herts.

## CONVECTOR GRATES IN HARLOW HOUSES

*Sutton convector grates are being installed in a number of the Harlow Development Corporation houses. The one shown in the photograph has a back boiler which supplies the hot water, and convected warm air is supplied through a grille in the dining room. In certain types, however, the warm air is convected to a bedroom.*

*CONSULTATIVE COUNCILS*

# Partial Closing of Showroom Justified

A VARIETY of subjects was discussed by the South Eastern Gas Consultative Council when it met at Caxton Hall on September 2, with Councillor A. B. Constable, M.A., B.SC., in the Chair. Preliminaries having been observed, the Council first turned its attention to the matter of the Weybridge showroom, which has figured in its discussions on several previous occasions.

## Chamber of Commerce Protest

This subject was first raised by the Weybridge Chamber of Commerce which protested at the partial closing of these premises. A further letter had complained that in addition to the partial closing already in operation, access was not available to the public on Tuesday and Thursday mornings. It had been agreed that the suitability of the present arrangements should be judged over a trial period of six months. This period has now elapsed since the restricted hours of business came into force and a report on the result had been received from the West Surrey Division Sales and Service Manager, Mr. F. A. Cheeseman, and forwarded to the Council by Mr. V. W. Stanton, the Board's Commercial Manager.

The report made it clear that the greatest number of consumers went to the showrooms to pay accounts and that the number dealt with during the first six months of this year (1,739) was only slightly below the figure (1,825) for the corresponding period in 1951. It was concluded, therefore, that the Board's decision to restrict hours of business at the showroom was fully justified, and this view was substantiated by the fact that no complaints had been received. However, the Board stated that if complaints were made, it would consider opening the showroom as before.

The Council agreed that this answer was satisfactory, and the Chairman pointed out that although the Council existed to deal with consumers' complaints, it was also concerned with the price of gas, and this matter was an indication of the Board's intention of making economies where possible.

## Gas for Baking

Another item which was the cause of considerable discussion was a resolution put forward by the Kent County District Committee 'that in view of the very large gas consumption of this firm (Sittingbourne Co-operative Society) for bakery purposes, the matter be referred to the Board for consideration, to ascertain if a reduction in price could be effected, bearing in mind that the average cost for gas used per sack of flour is 3s. 1½d. and the corresponding cost, using coke, is 2s. 6½d.'

It appears that the general price of gas in the district is 20d. per therm, while the price charged to bakers is 13.5d. When the Sittingbourne Co-operative Society first agreed to use gas for baking purposes, as a result of being approached by the Sittingbourne Gas Company, the price paid for gas was 10.8d. per therm. The price was increased to 12.5d. in 1951 and subsequently increased to 13.5d.

After general discussion, based on the information that the bakery, which consumed 9¼ mill. cu.ft. a year was not the largest bakery in the area, and the fact that Mr. Stanton had stated that the Association of Master Bakers appeared satisfied with the price charged, it was pointed out by the Chairman that any exception made in this case would have repercussions elsewhere, and agreed that the comparative costs per sack using gas and coke might not have taken into consideration the additional cost of storing and handling coke. The general feeling was that little could be done about this case and the matter was referred back to the District Committee.

A further resolution, from the West Surrey District Committee, requested 'that the Consultative Council be asked to approach the Board with regard to charges to consumers for the supply of fittings necessary for maintenance or installation of appliances, as compared with prices charged by retailers such as builders' merchants.' The resulting discussion revealed that the Council had little knowledge of the factors involved and it was agreed that more information on the subject should be sought.

Two resolutions were put forward by the Sussex District Committee. The first stated 'that in spite of improvements effected as reported by the Divisional Sales and Service Manager, this Committee are still of opinion that the Board should be requested to place the locality of the Houndean Rise and Downs Estates (Lewes) on the priority list for main-laying proposals as a matter of extreme urgency.' This was agreed by the Council, but the second resolution—that the Council consider the appointment of a representative of the Borough of Hove as an additional member of the Sussex District Committee—was deferred for the time being awaiting information from the Ministry regarding future plans, the suggestion was, however, sympathetically received, it being recognised that Hove was the third largest borough in Sussex with an important catering load.

Other items dealt with during the meeting included the receipt of the Board's mainlaying proposals and six district committee reports.

# Board Undercuts Traders

MEMBERS of the East Midlands Gas Consultative Council on September 2 at Nottingham supported the Gas Board in its policy of selling domestic appliances at prices below those charged by private traders.

A report from the Lincolnshire Divisional Committee said that a complaint had been received from a Lincoln firm saying that the local undertaking had sold a water heater at a price less than the listed manufacturer's price. The firm asked if such action was in accordance with the Gas Board's policy and said that they wished to protest against such a policy if it was in force. The report said that the charge was in accordance with the Board's cash selling policy. The list charge used by the manufacturers concerned was not part of a retail price scheme and traders were free to sell at either the list price or a lower price. Because they bought appliances in large numbers the Board had a slightly better buying price than private traders—the difference was only a matter of pence—and although it was not the Board's policy to cut prices, they were prepared to accept a lower profit than the trader who had protested.

Mr. W. Albans, Chairman of the Lincolnshire Committee, said he thought the present policy was right and the Chairman of the Council, Alderman C. R. Bates, added: 'If we can sell to the public at prices lower than the ordinary traders I hope we will do it.' After hearing that the firm who had protested had been particularly concerned about infringement of price maintenance schemes, which were not affected by the case which they had reported, the Council approved the report of the Lincs Committee.

A scheme to improve gas supplies in the Littleover district will be completed early next year if sufficient pipes are available. A report presented to the Council said there had been complaints of poor pressure in the district. A scheme to improve the position was approved in July, 1950; it involved laying 2,535 yd. of 8-in. main.

It was reported that the linking of the Nottingham and Newark undertakings had been completed and that Southwell had also been linked with Newark. Bingham and Riddings plants had ceased to be manufacturing units and were now receiving bulk supplies of gas from other undertakings.

---

**Ambulance Competition.**—Six teams—three from the Sunderland Division and three from the Newcastle Division—competed in an ambulance competition held by the Northern Gas Board in Sunderland on August 30. Winner of the competition was Newcastle St. Anthony's team with 136 points. Hendon Unit of the Sunderland Division was 11 points behind, and third place went to the Newcastle North Shields team which had 113 points. The three winning teams will compete in the area final to be held in Newcastle on September 20 and the winner of that competition will go forward to represent the Northern Gas Board in the National Final to be held in London in October.

# Gas Industry in France

--By ASHTON

## *A selection from the French Technical Press*

M. J. ALIBERT presented a paper to 'Gas Week' (*Journal des Usines à Gaz*, May) on the metering of large volumes of gas—gas in movement in a large transmission main, often at high pressures. Four types of meter are discussed: Volumetric meters at low pressure, volumetric meters at medium and high pressure, pressure meters, and tachymetric meters. The volumetric meters fail when the volume to be measured is of the order of 50,000 cu. m. (say 1¾ mill. cu. ft.) per hour—they become impracticably big. At half that capacity the Delta meter can be adjusted to give satisfactory results. The pressure meters include the pitot tube and the venturi. With the former the speed of travel must be at least 12 m. per sec. to obtain an error less than 1%. In both cases the density of the gas must remain constant. The orifice meter is a variant on these. The tachometric meters include several arrangements of anemometers. A special type is that used in the Thomas meter, consisting of a hot wire through which the quantity of electrical energy passing is proportional to the velocity of the gas; in this case the specific heat of the gas must remain constant. Finally, and additional to these, is the use of the 'tracer.' It consists in calculating the volume of a given length of main, noting the pressures and temperatures at each end, and determining the mean speed of displacement of this volume by introducing at the up-stream end a certain quantity of ammonia the arrival of which at the down-stream end is detected by a paper filter with a coloured reacter, the time being the figure to be observed. Agreements with metered measurements of the order of 0.5% have been noted with this arrangement.

### Coal Preparation

M. Ch. Tixier, former 'Adjoint' to the Director of Equipment of Gaz de France, writes on the preparation of coal (mixing and blending) for carbonisation. His main preoccupation is with the quality of the coke produced. In France the mechanical strength of coke is measured by the Micum test which consists essentially in the determination of grading after a specified number of turns in a specified drum screen. The results of this test combined with the bulk density of the coke leads to a formula established by the Institute of Steel Research by which an index T is calculated as follows:—

$$T = M_{40} + M_{20} - M_{10} - 0.2d.$$

where $M_{40}$ is the refusal over a 40 mm. mesh in the Micum test.
$M_{20}$ is the refusal over a 20 mm. mesh in the Micum test.
$M_{10}$ is the proportion through the 10 mm. mesh.
d is bulk density in kg. per cu. m.

A standard coke from the point of view of the blast furnace corresponds to a value of T averaging 73. With very good cokes T may reach or even exceed 80. To be acceptable it must not go below 60.

To secure good results mixtures for blending must be carefully controlled and the constituents well broken. In the gasworks where the coke is generally intended for domestic use breaking need not be pushed further than, say, 30 mm., but in the manufacture of metallurgical coke in coke ovens breaking must go to 3 mm., while additions of coke breeze must be broken, after drying to 0.3 mm. (say ⅛ in.). Coke dust must be very intimately mixed with the charge because of the small proportion which is added. After some American examples, M. Tixier describes three examples of French practice.

At the coke ovens of Carling a three-part blend is used. One successful blend is 72% fat Lorraine coals, carefully de-dusted to eliminate excess of fusion, 16% bituminous swelling coals, 12% coke dust (which it is proposed eventually to derive from semi-coke). The charges are rammed before charging to a density above 1,000 kg. per cu. m. with 10% moisture. The ovens must have a maximum height not more than eight times the width.

At Marienau, the blends range from 40% to 80% fat Lorraine coals, 25% to 40% Ruhr bituminous coals, and 12% to 20% semi-coke dust. One successful blend was 70% Ruhr coals with 30% semi-coke dust. Ramming is not employed.

At Thionville the technique is characterised by the employment of two or three part blends and the specific preparation of the fusible fraction, utilising the differences in hardness which exist between the different petrographic constituents to prepare concentrations of these constituents for different treatment. The concentrations are obtained in the following manner.

The washed fines are first screened with separation to 2 and 4 mm. The fraction through 2 mm. constitutes the concentration of vitrain-clairain, the fusain having been previously eliminated by de-dusting. The fraction 2 to 4 mm. constitutes the durain. The fraction over 4 mm. is made up of conglomerates containing vitrain, clarain, and durain. It is submitted to a moderate breaking to separate these constituents. The product of this breaking is returned to the mixture entering the screens.

The concentrations are then treated separately. The vitrain-clairain, the most fusible fraction, is left in grains less than 2 mm. The durain, the least fusible, is broken to a grade less than 1 mm. A portion of the durain may be carbonised at low temperature to make the necessary semi-coke. Finally the whole is blended in determined proportions to obtain the mass for charging. With a mixture of 80% fat coals and 20% bituminous coke with an index T = 76 has been obtained. So far the pilot plant only is in operation. A plant on an industrial scale will be brought into commission this year.

### International Gas Conference

Commenting on the International Conference at Brussels the Editor of the *Journal des Usines à Gaz* writes: The gas industry has arrived at a veritable turning point in its history: the gas distributed has no longer the uniformity of composition which we have known in Europe prior to the war. After America, natural gas has appeared in the old Continent. Firedamp has been domesticated. Petrol serves more and more as a raw material. But a revolution of this extent is not accomplished instantaneously. Techniques of manufacture are still in the trial stage or at the beginning and many details remain to be established. On the other hand factors which condition the interchangeability of gases in utilisation begin to be known with precision. The contribution made by France to the understanding of these burning subjects has been noted and has shown up well against the reports of our colleagues of the United States which, by force of circumstance, has a big lead on us in this respect. It is the same in questions of transmission where one should not under-estimate the importance of the reports presented by the Association Technique du Gaz on the utilisation of transmission mains as storage and on the corrosion of those mains, internal and external.

The 69th Congress of the Association Technique de l'Industrie du Gaz en France—the French equivalent of the Institution of Gas Engineers—was held in Paris on June 24-27. There was an attendance of 650 members and visitors, among whom were noted M. le Guellec, President of the Council of Administration; M. Combet, Directeur General; M. Leclers, Directeur General Adjoint; M. Mougin, Inspecteur General; M. J. Delaruelle, Directeur of Production and Transmission; M. Certeux, Directeur des Services Financiers; Professor Ribaud, Director of Research; M. Biard, his 'Adjoint'; and many other important figures in Gaz de France. The Congress was presided over by M. Kec, President of the Association. He was supported by many foreign representatives, among whom Mr. H. S. Cheetham represented the Institution of Gas Engineers. Presidents of many sister associations in all parts of the world were elected Honorary Members.

Reports were received from the several Commissions appointed to study such subjects as manufacture, distribution, publicity and application, coke, tar, benzole and derivatives, education and documentation. It is interesting to note that the Commission on Manufacture is ready to publish for the use of technical staff and foremen in charge of carbonising plant a booklet on the regulation of coke ovens and settings, including Glover-West and Woodall-Duckham continuous vertical retorts with a brief summary of the elementary principles and properties of refractory materials.

As usual the programme of papers presented, 30 in number, covered a very wide range. Carbonisation and allied subjects were dealt with in several papers. The W.-D. setting at Marseilles was described by M. Delsol, referred to in our editorial of September 3. These settings have been provided with an individual feed of fuel gas to each of the combustion circuits permitting the regulation of temperatures at all points in the length of the retort.

## Metallic Recuperators

The use of the metallic recuperator in carbonising plant was discussed by M. B. Blanche. He thought this feature was on the point of general adoption, but that the choice of types of apparatus and their adaptation, for example, to the intermittent vertical retort, posed a certain number of problems which experience in the steel industry might help to solve. The two types in use in that industry, the 'needle type' in cast iron and the tubular type in alloy steel, both seemed applicable. Their perfect gas-tightness and the small space occupied gave them an incontestable superiority over the recuperator in refractory brickwork. An approximate calculation showed that they could reduce fuel consumption by as much as 15%. M. Allain referred to their use in the Gilly plant at Limoges (also referred to in our editorial). He stated that metallic recuperators working at 1,000°C. for reheating producer gas had only lasted three months, but those used at 800°C. for heating secondary air had lasted 1,000 days already.

Producers for the gasification of low-caking coals installed in conjunction with coke ovens at the Strasbourg gasworks consisted of the usual two parts, a carbonising zone placed above the producer proper. The two types of gas are taken off separately. The coal gas is passed through an electro-detarrer and a cooler, the producer gas through a washer-scrubber and a cooler, and for the mixture of the two gases another electro-detarer is provided. Tar, light oils, and phenols are collected separately.

For the control of 'calorific flux' in the several regions of a battery of coke ovens, M. Canivez discusses the use of the 'caloriscope,' an instrument which permits the regulation, if not the maintenance, of heat flow at a determined figure at least the maintenance of a constant value of the expression $c.v.\sqrt{d}/p$, in which c.v. is the calorific value of the fuel gas, d its density, and p the pressure. The result is that the heat flow is constant in each combustion chamber in service, whatever their number and without the necessity of modifying the regulation when this number varies. In reply to questions, the author admitted that in practice the caloriscope could be replaced by a simple pressure regulator.

The interest of the French gas industry in the use of propane and other hydrocarbons as well as of cracked petroleum oils was reflected in three papers. The removal of sulphur compounds by the dry oxide method was discussed theoretically in one paper while another discussed results in a semi-industrial scale liquid plant, the Wilputte process employing carbonate of sodium. The content of $H_2S$ is reduced by 90% to 95%. The operation of the plant is claimed to be very simple, supervision may be reduced to the minimum, but steam consumption is rather high and supplementary dry purification is necessary.

Instrumentation, particularly automatic devices, formed the subject of another paper. M. Cassan assured the conference that manufacturers had well bear in mind the industrial uses of automatic control, but M. le Pasiter warned it that security could not be dissociated from automatism since failure of the apparatus was always possible.

## Mains and Joints

A communication from Mlle. Geneviève Desnos, of the Research Staff, on the evolution in the quality of rubber used in the joints of gas mains, gave rise to an interesting discussion. She said that 20 years ago the joints were in natural rubber with little filling. After 1930 they had been constituted of solid matter with rubber as no more than an elastic cement. Since then synthetic rubbers with new and promising properties had come into use. The 'perbunans' had given excellent results. The joint problem was complicated by the advent of gases differing from the original coal gas and by the practice of de-benzolisation. Perbunan was much less sensible to benzole. The lead joint was discussed in another paper, and yet other papers discussed problems of long distance transmission, the protection of steel mains against corrosion, and the risks attendant on the deposition of naphthalene in transmission mains under pressure.

In the field of application MM. Georges and Pierre Meker submitted a proposal for the graphic registration of the height of the blue cone to which they attached such importance that they proposed to call it the 'index of utilisation.'

M. de Jerphanion, Directeur of Industrial Applications, reported upon progress with a new technique for heating dwellings with hot air. The new technique is based on keeping a reserve of hot air in the upper portions of the passage serving the different rooms and on the distribution of this hot air by electrically operated mechanism with thermostatic control. It appeared in the discussion that the proposed system would be pretty expensive, not likely to be competitive with the usual hot water system coke-fired. Other papers dealt with burners, ventilation, and safety appliances for heating systems with boilers.

## Effluents

The edges of this question were touched by a report on dephenolisation in the U.S.A. and by an account of tests at Creil on the use of activated carbon for this purpose. This technique consists of three operations: Adsorption of the phenol of ammoniacal liquor at 60°C. by circulation in a column containing 270 kg. of active carbon; desorp-

(*Concluded on p. 574.*)

# Industrial Gas Supply and Utilisation

By F. DICKINSON,
Divisional Industrial Gas Engineer, Sheffield and Rotherham Division, East Midlands Gas Board

**From a paper to the Staff Conference of the Board held at Skegness, May, 1952**

IN the area of the East Midlands Gas Board commercial consumers account for 8% and industrial consumers for 43% of the total area gas sales, the latter being weighted by the incidence of the high percentage in the Sheffield and Rotherham division. It is estimated that a fair average for the whole country would be 10% commercial and 23% industrial.

The commercial field is next in category to that of domestic; the prices charged for gas are usually within the range of the domestic charges, and the applications numerous. Commercial consumption combines the benefits of rapid turnover and stability of output with a spreading of closing-down risks over such a wide diversity of firms and trades that the possible effects of slump conditions are greatly reduced. Stability is also enhanced by the incidence of the steady domestic demand for the various types of products.

Fundamentally, the applications can be considered to cover a range commencing with small space heating and hot-water units, working up through central heating to small or medium process loads, particularly in the preparation of food and products for retail trade purposes, with digressions into the small utility and luxury trades.

The retail food trade, for example, provides a diversity of heating processes of useful load-building capacity as follows:—

(a) Hotel, restaurant, café, snack bar, and canteen produce.
(b) Fish and chips.
(c) Cooked meats and similar specialities.
(d) Sweets and chocolates.
(e) Bread, cakes, and confectionery.
(f) Non-alcoholic beverages, vinegar, pickles, sauces, etc.

## Industrial Applications

The field for industrial utilisation is one of larger dimensions, with greater production and gas usage. The diversity is wider than in the commercial field as it includes the processing or using of liquids, gases, and metals. For example, hot water applications are extended to process requirements, swimming pools, etc.; steam usage is extended to boilers of greater evaporation rates than for commercial applications. Space heating is much the same but bears reference to factory workshops, large buildings, and offices, while food preparation is in terms of bulk production of such items as potato crisps and cereals; steaming of food products under pressure; roasting of coffee, malt, and meats; baking of bread, cakes, biscuits, confectionery, rolls, pies, etc.; and the manufacture of chocolates and sweets.

The main applications, however, are in the definite sphere of engineering and, briefly, cover the casting, processing and heat treatment of ferrous and non-ferrous metals; the melting and manipulation of glass, the manufacture of paints and varnishes; protective coatings for finished articles; the drying and firing of ceramic articles; the drying of powders and similar small-sized materials and the incidental heat demands of manufacturing processes or fabrication work such as obtains in construction steel works or shipbuilding yards.

## Dealing with Individual Projects

A primary function of the sale of gas for commercial and industrial purposes is a technical knowledge of the consumer's basic requirements, combined with practical mechanical engineering and metallurgical experience and supported by a sense of proportion in matter relating to fuel and other economic factors. This is of vital importance, as a practical customer reacts favourably when discussing technical problems and operating costs with an engineer who is conversant with such matters. The intimate practical knowledge of the multiplicity of process requirements can only be acquired by years of experience in close contact with industry. It is necessary to have even wider contacts, for certain trades are located in specific districts so that no single industrial gas engineer can be expected to have a complete and detailed knowledge of all heating applications.

It should be borne in mind that the sale of gas for industrial purposes is generally on a different basis to the sale of ranges of approved appliances such as cookers, fires, and water heaters, which are available in predetermined sizes at appropriate prices. The majority of industrial applications vary so widely in their requirements that it is necessary to define these in detail for each particular project and then prepare a specific scheme or unit to match. In other words, it is a matter of selling ideas rather than directly selling gas or appliances, and in many cases it is necessary to create these ideas and cultivate a desire in the consumer to apply them.

With this in view, the psychological approach and sequence of events should normally be on the following lines:—

(1) Creation of interest of customer.
(2) Discussion of technical problems, with appropriate recommendations.
(3) Discussion of economic factors.
(4) Preparation of considered scheme, with alternatives where these arise.
(5) Presentation of suggested schemes for final clarification of any relevant points, prior to presentation of a final approved scheme.

It is essential to remember that executive works officials have considerable responsibilities in their own spheres, and the objective is to relieve them of any detail work relating to specialist problems, to the extent that it is only necessary for them to adapt a submitted scheme to a form of presentation best suited to their internal requirements before stating their own case for managerial approval. Finally, in the course of any negotiations, it is of paramount importance that information derived from specialised applications in one factory must on no account be divulged to another consumer without prior sanction having been obtained. This is a vital matter in areas where competition is exceptionally keen and it entails the observance of a rigid code of business etiquette.

## Gas Availability

It is axiomatic that there is no virtue in producing a commodity if there is no sale for it, and, thus, that gas production is directly related to gas sales as an engineering and economic function. Before embarking upon any scheme for the development of gas sales for commercial and industrial purposes it is necesary to define the existing maximum daily output under the worst peak load conditions and to estimate the residual manufacturing capacity of the plant and/or availability of additional gas from all sources of supply. This will indicate the limits within which expansion can be considered, after a reasonable margin has been allowed to cover temporary breakdown contingencies, plant overhauls, etc. When a further allowance for a cumulative increase of, say,

3%, has been made for expansion of gas usage for domestic purposes, then the remaining plant capacity can be fairly allocated to industrial expansion. There are other internal aspects to be considered, such as the capacity for purification of the additional gas made and the relation of total holder capacity to peak and daily demands. On the assumption that these will meet the new total loads, and that little more labour is required, the net cost of manufacturing the additional gas can be assessed on the basis of 'total cost of extra coal, including all handling charges, less the cost of residuals, plus purification costs.' The possibility of having to produce, or obtain, further supplies of gas in the event of the demand approaching the limits of existing supplies is a matter which cannot be relegated to the background, and the contingent capital cost of such must necessarily be the subject of wider consideration.

## Peak Load Problems

When the datum lines of existing normal and maximum usage have been established, it may be desirable to seek appropriate seasonal stabilising loads to fill the charted valleys of demand without materially increasing the peak demands. This is an ideal not easy to achieve, but by careful selection of commercial and industrial loads it may be approached to the extent where the ratio of peak to minimum demand can be appreciably reduced, so materially assisting gas production schedules and increasing overall plant efficiency.

In a seaside town the heaviest demand period may well be in the summer owing to a heavy catering load. This will fall off completely in the autumn, when a winter space heating load would be welcome. In contradistinction, the latter could be undesirable in an area which has a heavy industrial load and where additional gas supplies are limited as it could impose an abnormal peak and general demand at a time when the consumption is already at a high level. This heating load comes into operation immediately there is a drop in external temperature, but is slow in falling when the temperature rises; a delay of 48 hours is quite usual, during which period there can be a considerable gas usage.

The ideal load is one of steady and continuous operation, such as the firing of kilns or glass tanks, and the worst load is that of intermittent high consumption which can be a shock load liable to disturb other consumers in the vicinity and also reflect directly on gasholder and manufacturing capacity.

There is generally an added responsibility in accepting beneficial loads, due to the fact that the heating cycles involved are normally of a critical nature over extended periods during which the gas supply must be maintained at a defined level, otherwise damage could be done to the product which may, in total, be of considerable value. Glass, for example, can be melted in a known time at 100% heat input, but it cannot be melted to the required consistency at, say, 85-90% heat input, and production would thus be *nil*.

Any main meter employed should, of course, be of sufficient capacity to meet all internal peak-load demands; it should be fitted near to the works boundary in a well protected position and no two main meters should be connected to a common internal ring main. Sub-meters or check meters should also be sited in positions where they cannot easily be damaged or subjected to undue exposure to weather or excessive temperature.

Internal supply pipes from the outlet of meters should be of ample size to meet the maximum load with a minimum pressure drop. These pipes may be laid by a consumer or his contractor, and it is in the best interests of all concerned that advice should be given by the local gas undertaking in respect of appropriate pipe sizes. Where possible, the supply to each unit should be a size larger than the gas connection on the burner equipment, with a minimum of bends and avoidance of elbows or other points of unnecessary frictional resistance. This may appear obvious, but many pressure complaints are due to neglect of such simple precautions.

Difficulties can also be caused by the cumulative addition of points of usage over an extended period to supply lines which were of sufficient size for the original requirements. In other cases the first furnaces on the supply may have the heaviest demands, or be of the types fitted with burner equipment which inspirates gas, to the detriment of supplies to natural draught equipment connected further down the line. A temporary expedient would be to carry an over-riding feeder supply to a point at or near the end of the line, so making a ring main and back-feeding gas at the optimum available pressure to the distressed section. A better way is to relay the supply in piping of ample size, and consumers are usually prepared to do this when the facts have been shown to them by a series of pressure tests taken under conditions of full operation.

## Installation Tests

In a heat-treatment shop, or spread throughout a factory, there may be a variety of gas-burning units, made by different makers, and each having distinctive burner equipment of proprietary design calling for a definite gas pressure to give maximum burner efficiency. The pressure range is usually within 1 in. to 4 in. W.G., and often between 1.5 in. and 2.5 in. W.G. This calls for close governing, and it is better practice to fit a governor to each piece of equipment than to have one master governor. With the former arrangement the incidence of shutting off any one unit does not affect the predetermined pressures at the other units.

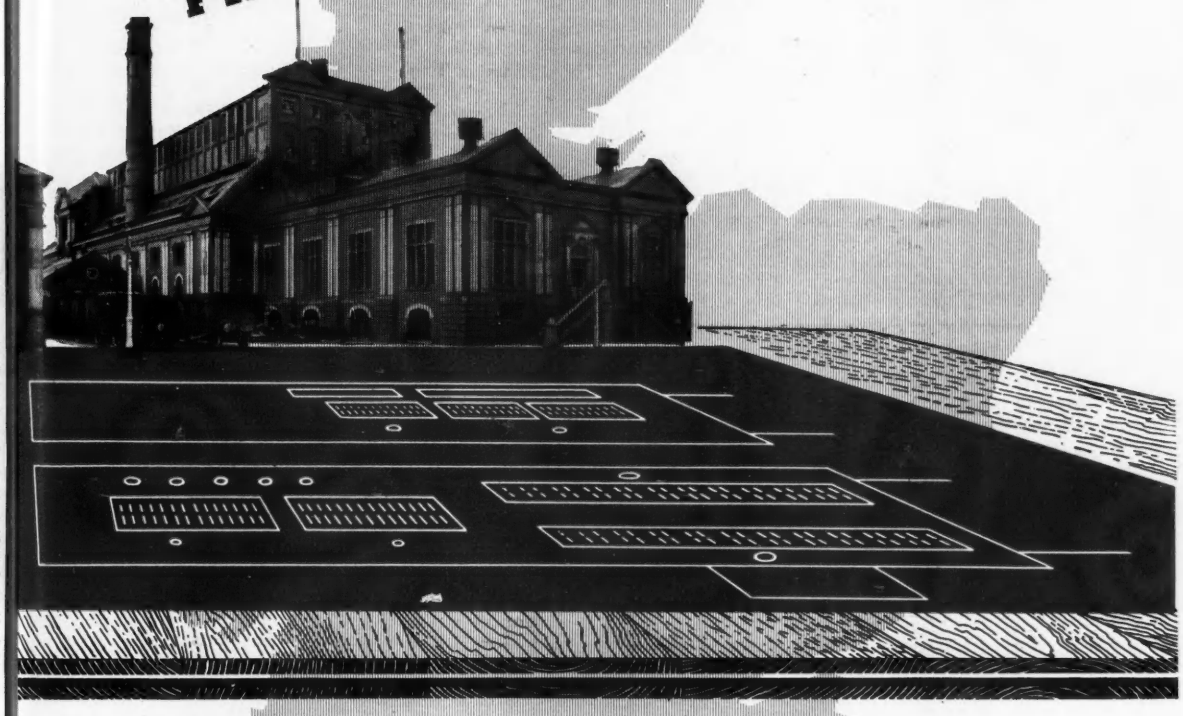
It is desirable to fit back-pressure valves on the gas supply lines to furnace units which use air-blast burners, and where gas boosters, gas compressors, or air-blowing fans connected to inspirating equipment are installed it is good practice to fit a safety cut-off device in conjunction with the starting switch. This is arranged to break the electric circuit in the event of the gas pressure falling below a predetermined pressure of the order of 0.5 in. to 1 in. W.G., and so prevent a direct suction on the meter should the inlet valve be closed. Simple safety cut-off valves can also be fitted in the gas piping adjacent to natural draught burner equipment, and on pilot lines, and these will close down should the gas pressure be unusually low for any reason. They will remain closed upon pressure lift until hand re-cycled, and in certain types cannot be re-cycled until the main burner cock is first closed. This prevents the possibility of leakage of unignited gas into an appliance or furnace when normal pressures are resumed.

## General Service and Maintenance Work

It is customary for many commercial and industrial consumers to approach the local gas undertaking with requests for the servicing and maintenance of proprietary appliances which they have installed. This may refer only to gas fires and water heaters, but can embrace boiling-water units, canteen equipment, space-heating appliances or boilers, and industrial furnace units. The overhauling of most burner equipment and renewal of jets or other components is relatively simple, presenting little difficulty if the labour is available and has been trained to do this sort of work. There are, however, several aspects of maintenance work which require consideration. Some firms wish to enter into contracts for maintenance to be done on named appliances at specific times. Should these appliances be used in connection with their retail trade, and this be affected by failure to overhaul the appliances at the precise contract time, a claim might be made for loss of business. To obviate this a suitable protective clause should be included in every contract. This is particularly important in the case of fish frying ranges having extraction fans which pull the grease-laden fumes through ducting, where the fat precipitates upon the cooler portions and is liable to melt and ignite should there be a spillage of burning fat into the ducting.

Another service which is sometimes asked of undertakings is the maintenance of safety devices incorporated in certain types of equipment. There is a large variety of these devices, ranging from simple bi-metallic to elaborate electronic units, calling for a considerable amount of technical knowledge and experience clearly beyond the training of normal service fitters. Some makers instruct their clients to request the gas board to

# FROM DRAWING BOARD...



# TO GAS BOARD

The No. 2 Retort House at the **Edinburgh Works of the Scottish Gas Board**, in which the Fourth and Fifth W-D Installations, each of 28 – 82" Lambent Heated Retorts, are at present under construction. The building also houses the First Installation of 88 – 76" Downward Heated Retorts. No. 1 Retort House contains the Second and Third Installations of 40 – 103" and 24 – 103" Upward Heated Retorts respectively. Thus there will shortly be a total of 208 W-D Continuous Vertical Retorts at Edinburgh with a coal carbonising capacity of 2,000 tons per day.

**WOODALL-DUCKHAM**

**VERTICAL RETORT & OVEN CONSTRUCTION CO. (1920) LTD**

WOODALL-DUCKHAM HOUSE, 63-77 BROMPTON RD., LONDON, S.W.3 • Telegrams: RETORTICAL (SOUTHKENS) LONDON Telephone: KENsington 6355 (10 lines)

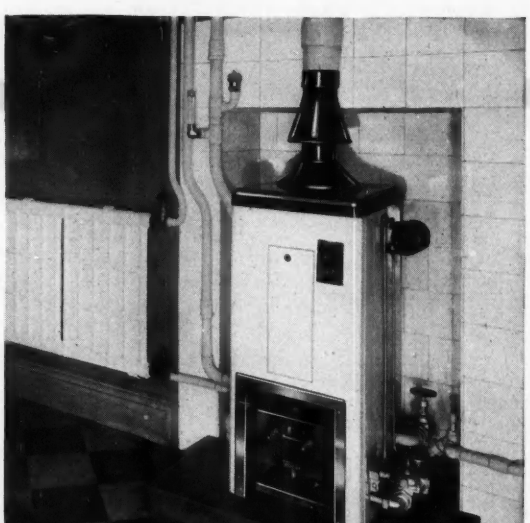
*This illustrates the No. 1-GBB Series Boiler with cream and black stove-enamelled jacket, available in six sizes from 26,000 to 142,000 B.T.U. per hour. The interior shows a No. 1-GBB-3 Boiler situated in a private residence.*

# *For efficient and lasting service...*

To burn gas efficiently for the production of hot water, either for domestic purposes or central heating, demands a Boiler specially designed for the purpose. Over a period of 20 years we have developed a series of Boilers, each of which is unequalled in its particular field.

All Boilers are equipped with a complete set of thermostatic controls, and have insulated jackets of steel or aluminium in appropriate finishes. 'Ideal' Gas Boilers, of which several thousands a year are being installed, are available in 22 sizes from 20,000 to 1,430,000 B.T.U. per hour.

An illustrated booklet giving full details is available on request.



# IDEAL GAS BOILERS

**EFFICIENT · RELIABLE · LABOUR SAVING**

IDEAL BOILERS & RADIATORS LTD
IDEAL WORKS · HULL

IDEAL-Standard
Foremost for heating and sanitary equipment

service these devices. These requests must be firmly refused unless there are men competent to do this type of work, as any subsequent failure in operation may be deemed the responsibility of the gas board.

Except in isolated cases, furnace maintenance is done either by the consumer's own staff or by the furnace makers.

## Technical Services

General technical services vary considerably; they can be expressed more clearly under separate headings, as follows:—

(1) *Consumer Complaints.*

(*a*) *Poor Gas Pressure.*—This is the first stock complaint when an appliance or furnace is not operating normally. As it may be true, it is necessary to take pressure checks from inlet of meter to point of application. This may reveal stressed or small interior piping and local stoppages.

(*b*) *Variation in Gas Characteristics.*—Most furnaces are not sensitive to this, but where natural-draught burner equipment is used, or with certain types of air/gas mixing equipment, especially if the equipment is being used to its maximum capacity, there can be occasions where such variations could be noticed. This is not generally the case as there is a fairly wide tolerance before it becomes apparent. The most notable variant beyond that of pressure is specific gravity, which can normally be catered for. The same holds for the sulphur content of a gas, and both are frequently thought to be culprits when investigation often proves otherwise.

(*c*) *Furnace Operation.*—Should the furnace performance still be unsatisfactory when the above factors are normal, it becomes a matter of investigation on the burner equipment and furnace itself. This may cover automatic control and temperature indicating/recording equipment as well as flue gas analyses and probing for furnace interior temperatures. It may well resolve into an investigation of the actual material being heated, the correct heating cycle, and operational methods. The time spent on such work can vary from hours to weeks, depending upon the problems involved, but the final results are a complete vindication of this type of service.

(2) *Advisory and Testing Services.*

(*a*) *Types of Furnaces and Applications.*—In every factory there are changes of technique to meet modifications to existing products or entirely new markets. During the development stage, consumers seek and welcome advice regarding suitable furnaces or heat process applications for their specific requirements. One of the natural approaches is to the gas undertaking where, if the information is not immediately available, it can be obtained from appropriate sources.

(b) *Testing of Furnaces.*—New furnaces are normally installed, dried out, tested, and handed over by the makers. On occasions there may be a request by a maker's representative either for personal assistance or for the loan of test equipment. Should any difficulties arise at a later date, however, the gas undertaking is usually approached in the first instance and, even if the trouble is too technical to be resolved immediately, it may be possible to maintain production by temporary expedients until the makers are able to locate the cause.

(*c*) *Furnace Efficiencies and Fuel Conservation.*—These two items are often complementary, so that where furnace performance is unsatisfactory it is generally possible to restore the original conditions by overhauling the burner equipment and setting it for optimum combustion and correct internal atmosphere. This increases production and reduces the gas consumption. Instrumentation, automatic temperature controls, and, in some cases, modification of design combined with the use of special refractories can effect savings of up to 25%. Even higher savings than this have occurred, and one of the most common causes of low efficiency and high working costs is an insistence on operating at temperatures much in excess of actual requirements. Here is scope for a service that, while saving gas at the moment, will sell more in the future. It is also a national service in the widest sense.

(3) *Development Work.*

*New Appliances and Furnaces.*—Manufacturers bring out modified or prototype units and, where practicable, prefer to have them tested by impartial bodies. In the commercial field, certain appliances are tested at Watson House and others at stations suitably equipped. This is of great assistance to makers in the development stages. Furnace applications are in a different category and development arises against local demands, but when new techniques and designs have reached finality the information is made available in report form. In general, the final unit is handed to interested makers for manufacture and marketing.

(4) *Technical Information.*

Throughout this section of the paper there has been an increasing stress on the technical aspects of industrial utilisation. This must necessarily be the case as it is inherently bound up with technical processing. While it may not be feasible to have suitably trained personnel on the staff of every undertaking, it is usually possible to enlist the services of a group, sub-divisional, or divisional industrial gas engineer as and when specific problems arise. The East Midlands Gas Board took a wider view than this when setting up the Industrial Gas Development Committee in June, 1950. Industrial engineer members were nominated from each division to meet regularly for the purposes of discussing local technical problems and being informed of national developments in respect of industrial utilisation. The intention was for the engineers to cope with their local problems whenever possible, but if they required technical information or assistance they could apply to the Committee through their general managers.

Further, by nominating the officer in charge of the E.M.G.B. Industrial Gas Development Centre to represent the Board on the Industrial Gas Development Committee of the Gas Council, he could act as a channel for the flow of information in both directions at national level.

## Typical Processes

It would be impossible to give a complete picture of the wide range of heat treatment processes required for commercial and industrial manufacturing processes within the limits of this paper. It is proposed, therefore, to select a few representative instances to indicate the flexibility of gas utilisation and the interesting nature of the trades concerned. This will not only reveal the fact that there is usually more behind a job than meets the layman's eye, but will show that there is a call for creative design to meet specific individual operations.

*Commercial Kitchens.*—Large scale cooking operations, such as obtain in hotels, restaurants, cafés, and canteens, include a number of gas appliances for simmering, boiling, grilling, roasting, and steaming. The first two can be done either on open or on solid-top hotplates, much depending upon the chef's choice. A useful compromise is to have an open type hotplate with several solid-top points for simmering and sauces, so giving considerable flexibility of operation. The bulk cooking of individual items requires large independent appliances such as roasting ovens, steamers, and pastry ovens, together with ancillary equipment such as bains marie, hot cupboards for the heating of plated meals, boiling water, milk and coffee appliances, and hot water boilers and storage sets.

The installation of all-black equipment is psychologically incorrect. It has a depressing effect on the kitchen personnel and can look dirty even when clean. The reverse happens with vitreous enamelled and chromium plated equipment. A well-planned kitchen should have good ventilation and lighting, suitable storage and equipment appropriately sited, and should be finished in a cheerful colour scheme as a measure of personnel welfare.

*Potato Crisps.*—The frying of potato crisps appears to be a simple matter, yet each 112 lb. of potatoes will produce only 32 lb. of finished crisps; there being a wastage of 12 lb. for skin removal and 68 lb. for moisture extraction. Selected

types of potatoes have to be used and correct frying is essential to ensure that the crisps do not discolour with keeping over a reasonable period. Small quantities were originally fried in normal fish and chip ranges as required, but as the demand grew it became a separate factory process done in a multiplicity of small or medium-sized hemispherical pots or in rectangular baths, each fed with sliced potatoes from a motor-driven slicing machine. With this method it is usual to have one female operator to each pot; she slices the potatoes, agitates the oil and crisps, and finally removes the finished crisps, emptying them into bins or on to a conveyor belt. To reduce these operations, the trend to-day is towards mass production from large baths on a continuous basis, the sliced chips being fed in at one end and conveyed through the bath either by means of a mesh conveyor or by movement of recirculated oil to the discharging end. Automatically controlled burner equipment is employed to maintain the oil at a temperature of about 350°F.

*Bread Baking.*—The baking of bread, cakes, biscuits, and confectionery is another phase of food preparation. The small baker bakes his bread first, and uses the residual heat in the oven for baking pastries and lighter goods. The large baker specialises in the mass production of one or more of these products. Where bread is concerned, it has become necessary to install a considerable amount of machinery to meet the demands for greater output, and to schedule the time cycles according to the grades of flour used. A brief review of the processes in the baking of bread may be of interest.

Normal white bread is made on the basis of a sack of flour, weighing 280 lb., to which is added about 140 lb. of water when mixing the dough, and other constituents such as yeast, salt, and malt; the whole producing 220 × 1¼ lb. standard loaves. The water is supplied from a tank at a controlled temperature of about 95°F., depending upon the type of flour used. The ingredients are mixed in a dough machine and transferred to troughs or pans for fermentation for some four hours at about 80°F. The dough is then weighed off in quantities of 2 lb. to produce 1¼ lb. loaves after baking, the loss in weight being due to the evaporation of the water. Each measured piece of dough is placed in a separate pocket and passed through a travelling 'prover,' the continuous flow at the outlet of the machine being transferred to bread tins which are returned to the final 'prover' for setting before being moved into the continuous swinging-tray or flat hearth travelling oven. The bread is baked at a final temperature of 480°-500°F. in approximately 45 min. and is cool enough to handle at the discharge end. The fuel consumption per sack of flour baked varies from 1.6 therm for continuous ovens to 3 therms for converted side peel ovens, and it can be as high as 5 therms for converted side flue ovens, the general run of consumptions being between 1.6 and 3 therms per sack, inclusive of initial heating. On the assumption that the above 220 loaves are sold to retailers at 7½d. each, and that the gas price averages 1s. per therm, it will be seen that the ratio of fuel to final cost is of the order of 1.0%-2.0%.

*Newspaper Printing.*—The newspaper trade is quite distinctive, having extensive heating demands for hot water, space heating, drying, and the melting of metal for linotype machines and plates. The greatest demand for heat is in the foundry, where there will be a number of autoplate units, each comprising a bath holding, say, 7½ tons of a lead-tin-antimony mixture which has to be maintained at a temperature of not more than 650°F. Each 7½ ton autoplate is usually rated at about 1,000 cu. ft. of gas per hour when full on, but is held at 620°F. during standby periods by one or two natural draught injector type pilot burners. There is generally a smaller pot furnace available for melting down metal into the small slugs required for replenishing the 6-in. diameter linotype pots. The greatest space heating demand is for the printing room, where it is necessary to maintain 70°F. at all times to ensure that the machinery, paper, and printing ink are all at correct temperatures for ideal production, whether 'inching' or full out at the rate of 60,000 to 80,000 papers per machine hour.

*The Glass Trade.*—This calls for a number of operations where gas can be used, such as sand drying, melting, cutting-off and fire-finishing, annealing, and other ancillary requirements. Glass is really a member of the ceramic group as it is a mixture of oxides, the principal component being sand—*i.e.*, silica. An appropriate mixture of newly mixed materials, termed 'batch,' is mixed with cullet, or scrap glass of similar constituents, in the ratio of 1:2 to form a new melt, or the feed of raw materials for continuous melting. This has first to be melted down and then held at about 1,360°C. for a number of hours to 'plain' or refine it before pouring or extraction for manipulation. The latter can be done by hand for blown or pressed ware, by intermittent extraction for automatic machines, or by continuous flow for sheet glass, tubing, and glass fibre.

In hand work, the operator inserts the end of a steel tube into the glass pot or tank and withdraws a 'gob' of glass. By blowing down the tube and swinging it about, he elongates the glass to pear shape before inserting it into a hinged cast iron mould where it is blown outwards to the prescribed shape. After removal, the scrap end is trimmed off and the article is re-heated in a glory-hole furnace for final shaping prior to annealing. When making pressed ware a similar 'gob' of glass is extracted and a portion of this is dropped into the bottom die of the press. The top die is brought down on to the molten glass and held down until the glass flows and sets to the die design. The pressed article is ejected, the 'flash' or scrap is removed, and the article taken to the annealing lehr.

Where there are automatic machines, these can be fed either from above with intermittent regulated 'gobs' of glass, or by feeder arms which dip into the feeding end of a melting tank and extract the required amount of glass by vacuum. In each case the glass is moved into prepared moulds and blown to the required shape. It is then moved to a machine where the flash is removed, and to an annealing lehr.

Glass fibre is made by remelting small quantities of glass in platinum boats from the base of which it issues through a series of small holes and is drawn away over rollers. When a piece of glass the size of a marble is remelted in one of these boats, it will produce about 95 miles of fibre having a diameter of two ten-thousandths of an inch.

Sheet glass is machine-made by drawing a film of molten glass vertically upwards from the melting tank through a series of driving rollers. When set, it is annealed in vertical or horizontal lehrs and cooled prior to cutting and stacking. Rolled plate glass is made either by pouring glass on to a flat table and rolling it to the required thickness, or by continuous flow over a weir to rollers set to give the approximate thickness. After setting it is annealed and ground to final thickness with sand and water before polishing with rouge.

A considerable amount of rod and tubing is still made by hand. Modern practice is, however, to draw the glass vertically upwards from a glass feeder, in a similar manner to the sheet glass process.

---

*GAS INDUSTRY IN FRANCE* (*Concluded from p. 570*).

tion of the carbon by washing with benzole; dephenolisation of the benzole by treatment with caustic soda. MM. Taubert and Alleton, of the Research Department, described a pilot installation at Tavernau of a bacterial method of treating effluent suitable for a small works. After filtration for the elimination of tar and sufficient dilution with water with recyclage of a part of the effluent obtained, the whole of the liquor production of the works was satisfactorily treated. The bed was of small dimensions activated by sewage from a neighbouring station. And finally, M. Bellet, of the Tar Research Department, described a process for the dephenolisation and depyridinsation of phenolic oils by means of the residual phenol-liquors which gasworks and coke ovens are required to dephenolise before evacuation.

# Education and Training

## A Report by the Institution of Gas Engineers to the 5th International Gas Conference, Brussels

THE Institution of Gas Engineers, at the request of the Council of the International Gas Union, undertook to collect from other member countries of the International Gas Union information in regard to education and training of personnel of all categories in the gas industry. A questionnaire was prepared for this purpose which consisted of four main sections dealing respectively with training (theoretical and practical), examinations and qualifying tests, facilities provided by gas undertakings to assist their personnel in connection with education and training, and scholarships, prizes, and special awards. Replies to the questionnaire were submitted by Gas Associations of Austria, Belgium, Denmark, France, Great Britain, Italy, the Netherlands, Norway, Sweden, Switzerland and the United States of America.

While a considerable amount of information has been obtained in connection with the schemes of education and training for personnel in the gas industry which are in operation in different countries, it may be that the questionnaire was not prepared in a manner suitable for the best presentation of all these schemes and in consequence the information contained in the report may be incomplete.

[In the following each question is given in full, together with a summary of the replies received from countries other than Great Britain.]

## SUMMARY OF REPLIES

### A.—Training (both theoretical and practical). Types of personnel for whom special courses of pupilage, apprenticeship, or training are considered necessary.

Q(1) ENUMERATE THE TYPES OR GRADES OF PERSONNEL FOR WHOM IT IS CONSIDERED THAT SPECIAL SCHEMES OF PUPILAGE, APPRENTICESHIP OR TRAINING PECULIAR TO THE GAS INDUSTRY ARE DESIRABLE.

Austria, France, Great Britain, the Netherlands, Sweden, Switzerland, and the United States of America all regard special courses for gas fitters desirable and most of these countries, together with Italy, recommend special training for gas engineers. Further, courses for gas salesmen or district service representatives, and for foremen and charge hands are mentioned by France, Great Britain, the Netherlands, Sweden, Switzerland, and the United States of America.

France considers that the training for gas engineers should consist of an initial course upon entry into the industry followed, after approximately three years' practical experience, by a 'refresher' or finishing course.

There would appear to be a consensus of opinion as to the desirability of providing special training facilities for the following grades of personnel employed in the gas industry:

Gas engineers.
Gas technologists (foremen and charge hands).
Gas salesmen and district service personnel.
Gas fitters.

Q(2) (*a*) FOR WHICH OF THESE GRADES ARE SCHEMES OPERATING IN YOUR COUNTRY?

Courses for the four categories mentioned in the summary of the replies to Question 1 already exist in France, Great Britain, and the United States of America. In addition, the training of gas fitters is arranged in Austria, the Netherlands, Sweden, and Switzerland and courses for gas engineers are conducted in Austria, Denmark, and Italy. Special tuition for gas technologists is organised in the Netherlands and Sweden. In Switzerland courses for engineers, foremen, and salesmen are arranged from time to time according to requirements but there is no regular and permanent organisation of such courses.

Q(2) (*b*) GIVE BRIEF DETAILS OF SUCH SCHEMES.

*Austria.*—The Technical College of Vienna has a Department of Fuel and Gas Technology which conducts a course for gas engineers. The students at the completion of their College course take a State examination, success in which entitles them to the title of Dipl. Ing. A similar course is arranged by the Department of Gas and Heat Technology at the Montanistic College, Leoben. The Chamber of Commerce (presumably of Vienna) arranges a continuation course for distribution personnel.

*Belgium.*—The Institute of Arts and Crafts at Brussels conducts a course for fitters and plumbers, the teachers for which are recruited from the technologists of the local gas industry.

*Denmark.*—The Danish Gas Union only recognises and admits technicians and members who, *inter alia*, have acquired qualifications in one of the following institutions:—

(*a*) Final examination of the School of Arts and Crafts;

(*b*) a technical school recognised by the State;

(*c*) an engineering college.

The Danish Gas Union once or twice a year organises courses covering the gas industry for its members which are not compulsory but which are usually well supported.

### France:

(I) APPRENTICES:

(*a*) *Le Centre d'Apprentissage de Versailles.*—This Centre has as its object the provision of a complete course for young boys wishing to become qualified craftsmen. They are admitted to the Centre as a result of an entrance examination, the level of which is equivalent to that of the Primary School Certificate. One hundred and twenty pupils are recruited for each course, the length of which is four years.

During the first year pupils are given a general education comprising French, history, mathematics, physics, chemistry, etc., in addition to training for their specialist trade. During the second and third years the students specialise in one particular branch with a view to taking an examination to enable them to obtain a 'Certificat d'Aptitude Professionnelle' (C. A. P.). The fourth year consists of two parts, one devoted to gas manufacture and the other to gas distribution.

(*b*) *Le Centre d'Apprentissage de Scourdois.*—This Centre aims at producing specialists for gas distribution and for the distribution of electricity. The course, which lasts for three years, is for candidates of from 15 to 17 years of age, the first year consisting of general education followed by two years of specialisation either in gas or in electricity. The C. A. P. of plumber-gas fitter is the qualification for the gas section.

(*c*) *Training Centre at Lyon-La Mouche.*—Attached to the gas works at Lyon-La Mouche is a training centre for apprentices who have signed articles of apprenticeship and who are given general and technical instruction, both theoretical and practical in a three-year course leading to the C. A. P. of a fitter and plumber. It is hoped that this training centre will acquire the same legal status as a centre of apprenticeship as those at Versailles and Scourdois.

(II) 'COURS DE PERFECTIONNEMENT' FOR FOREMEN.—This is a correspondence course of two years' duration initiated by the Association Technique de l'Industrie du Gaz en France for the training of foremen in the manufacturing, distribution, and administrative departments. The latter section is of more

recent origin than the other two sections and is intended for the training of personnel employed in the offices, stores, etc., and those concerned with the general administration of an undertaking. The first eight lessons of the first two sections are devoted to ancillary subjects such as mathematics, chemistry, physics, mechanics, electricity, and engineering drawing. The first section (manufacture) consists of 35 lessons which are dispatched to the students at the rate of two per month, the second (distribution) of 21 lessons dispatched at the rate of approximately one per month, and the other (general administration) of 18 lessons also dispatched at approximately one per month. With most of the lessons a problem is sent which is to be answered and returned to the Association within a month of its receipt. The lessons are not sent direct to the students but to their principal officers who are thus in a position to watch the progress of their employees and also to help and guide them in their studies and to assist them in connection with any particular difficulties with which they may be confronted.

In addition to the written papers, a number of manual tasks are set by the Association which the students have to carry out in the workshops of their undertakings. The products are also returned to the Association for assessment.

At the end of the course, students studying manufacture or distribution are able to present themselves for examination for the award of a professional certificate, which is recognised as a State Diploma. The third section dealing with general administration has not been running sufficiently long to obtain the status of official recognition by the State, but students studying this section are, if deemed worthy, awarded a certificate of assiduity and competence.

The number of candidates who may be accepted annually for these classes is approximately 35 to 40 for Section A (manufacture), 60 to 65 for Section B (distribution) and 50 to 60 for Section C (general administration). As the number of candidates always exceeds the number of places available, the applicants, who must be 23 years of age and have been employed in the gas industry for at least five years, are subjected to an entrance examination. The examination consists of a combined test of general knowledge and of professional knowledge of the industry lasting two hours and a test of simple calculations of School Certificate standard consisting of two or three problems and lasting one and a half hours.

(III) COURS COMMERCIAUX.—The Commercial Course is reserved for the employees on the commercial side of the industry and is available, generally, to those employees who are in contact with consumers. It aims at giving them, in a simple and easily assimilated form, sound commercial principles together with such technical information as is necessary for the proper understanding of the working of the industry.

The course is held in Paris annually, and is arranged to coincide with the exhibition Le Salon des Arts Ménagers, at which there are generally exhibited the latest designs of appliances for the utilisation of gas. There are normally approximately 250 attending the course; they are nominated by the heads of commercial services of the various undertakings.

(IV) LA PROMOTION OUVRIÈRE.—This is a full-time course of two years' duration, which is held at l'Ecole Spéciale des Travaux Publics, du Bâtiment et de l'Industrie in Paris for students from the electricity and gas industries whose studies have been interrupted for various reasons such as bad health, war service, or inability to continue study by reason of their employment, and who wish to proceed to higher positions in the industry, whether on the technical or commercial sides.

The students, who are normally between 20 and 30 years of age, take a correspondence course lasting one, two, or three years, according to their standard of education before attending the course. At the end of the correspondence course they undergo written and oral examinations, upon the result of which they may be selected to attend the two-year course in Paris. During the first year of the course students from both the electricity and gas industries study concurrently, but in the second year special lectures for gas students and special lectures for electricity students are arranged.

During the vacations they have practical training with a gas undertaking, either on the district or in the works. There are two sections, one for technicians and the other for administrative officers. The number of candidates is limited. During the year 1950-51 there were 42 on the technical side for electricity and gas in the first year and 40 on the administrative side. There were 18 in the second year taking the section specialising in gas. There is no examination associated with these courses, but the pupils are classified on leaving according to their achievements during the course. The positions offered by Gaz de France depend on this classification.

(V) LE CENTRE D'ETUDES SUPÉRIEURES GAZIÈRES.—This is a course organised by the Association Technique de l'Industrie du Gaz en France for engineers of at least three years standing in the gas industry who have reached a general standard of education equivalent to a licentiate of the university (approximately Higher School Certificate). It is held at the headquarters of the Association in Paris and lasts for a total of seven weeks, divided into three blocks; the first is held in November, the second in February, and the third in April and May. The number of candidates accepted for each course is approximately 24 (out of nearly twice as many applicants) and it is not restricted to members of the French gas industry, there being in each course one (or more) places reserved for an engineer from a foreign country. Applications for the course are submitted by the gas undertakings and a selection is made according to the university qualifications, the period of employment in the gas industry and the position held by the applicants. The course consists of a series of lectures given by specialists in the gas industry and covers all aspects of the manufacture, distribution, and utilisation of gas. In addition, works visits are arranged in connection with the course which ends with an educational tour of one week either in France or abroad.

A certificate of successful attendance is given on the completion of each course, which, while obviously of value to the technical personnel in the industry, does not itself ensure automatic promotion. Students who have attended such a course will, however, generally be in a better position to fill vacancies than those who have not.

(VI) LA SEMAINE GAZIÈRE.—The 'Gas Week' is held each year in Paris, at l'Hôtel des Anciens Elèves des Arts et Métiers, and consists of eight or nine lectures by experts drawn from the gas industry in technical and commercial aspects of the manufacture, distribution, and utilisation of gas. The programme generally includes one or two lectures by eminent scientists or industrialists which relate to new developments. Usually there are two or three works visits arranged in connection with the week. The conference takes the form of lectures without discussion and is attended by engineers and other managers of gasworks, to the number of about 250 each year, who are nominated by their senior officials for the course.

(VII) COURSES FOR CHEMISTS.—In addition to the educational courses mentioned above, it is worth noting that, in order to overcome the difficulties of recruitment and of the professional training of officers engaged in the chemical control of gasworks, la Direction de l'Exploitation de Gaz de France (Operation Management) organised as from 1948 some courses of training having as their objects:—

(*a*) The improving of the technical skill of laboratory staff in the undertakings;

(*b*) the arranging for the exchange of views between chemists in the various undertakings, and

(*Continued on p. 581*)

# WARDS for RAILS and SIDINGS

NCB

The layout illustrated above shows a tandem turnout providing a ladder of sidings at the Primrose Hill Unit of the National Coal Board, by whose courtesy the photograph is reproduced.

Because we take a pride in our undertakings relative to their size and importance, there is a tendency for us to feature our bigger contracts whenever we choose a photograph to illustrate our work. Nobody would gainsay us this very human privilege.

Nevertheless, there are always dozens of smaller jobs in progress all over the country in which we take no less pride—jobs which, relatively small though they be, still carry the unmistakable stamp of planned construction which characterises every Ward-built siding, no matter what its size or complexity.

*The Railway Siding Consultants and Contractors*

**THOS W. WARD LTD**

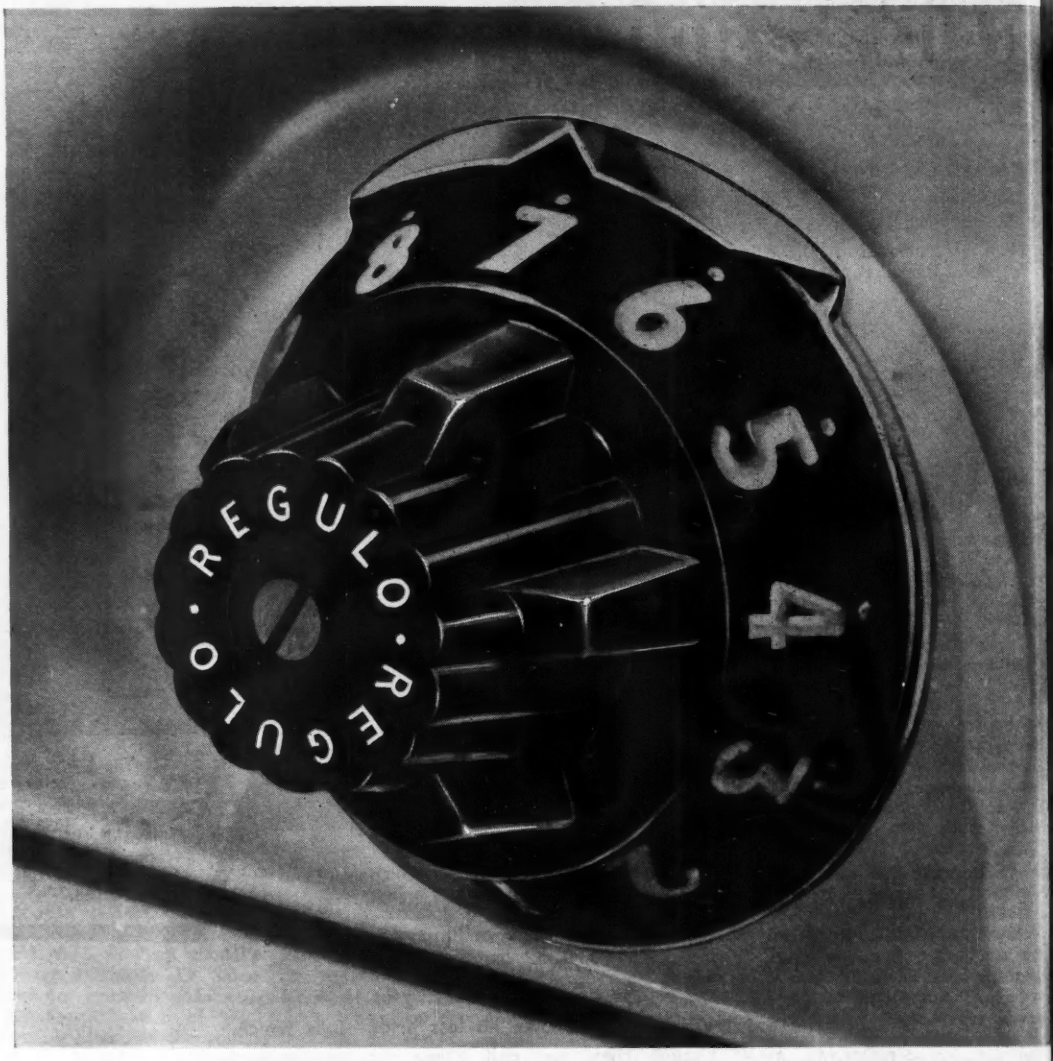
**ALBION WORKS · SHEFFIELD**

TELEPHONE: 26311 (22 Lines) · TELEGRAMS: FORWARD, SHEFFIELD

LONDON OFFICE: BRETTENHAM HOUSE · LANCASTER PLACE · STRAND · W.C.2

SC/21

# Only NEW WORLD gas appl




The introduction of the REGULO on the first NEW WORLD cooker in 1923 opened a new era by removing all the guesswork from cooking in the oven.

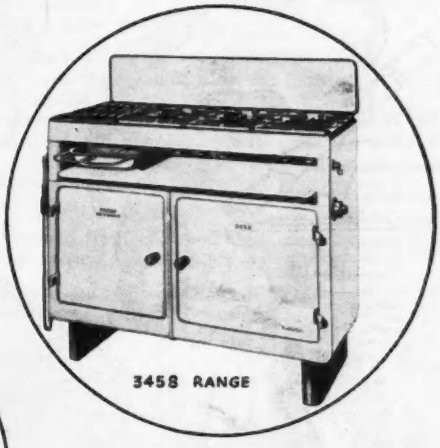
In recent years its use has been extended to provide NEW WORLD storage water heaters with a completely reliable automatic heat control.

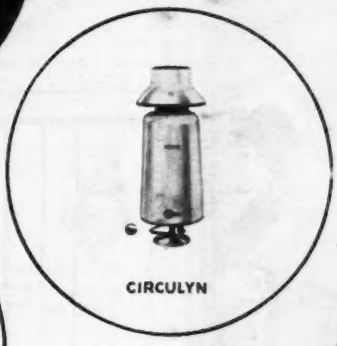
To-day, there are well over two million REGULO in constant use — a fitting tribute to the excellence of this ingenious device.

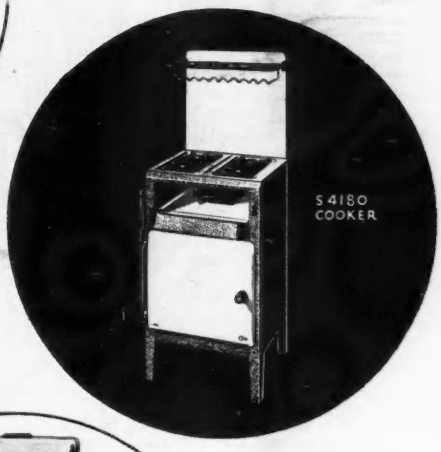
*Radiation Group Sales Ltd., Head Office and Showrooms:—7, Stratford Place, London, W.1 Tel. MAYfair 6462*

NEW WORLD NEW WORLD NEW WO

# ...pnces have REGULO control

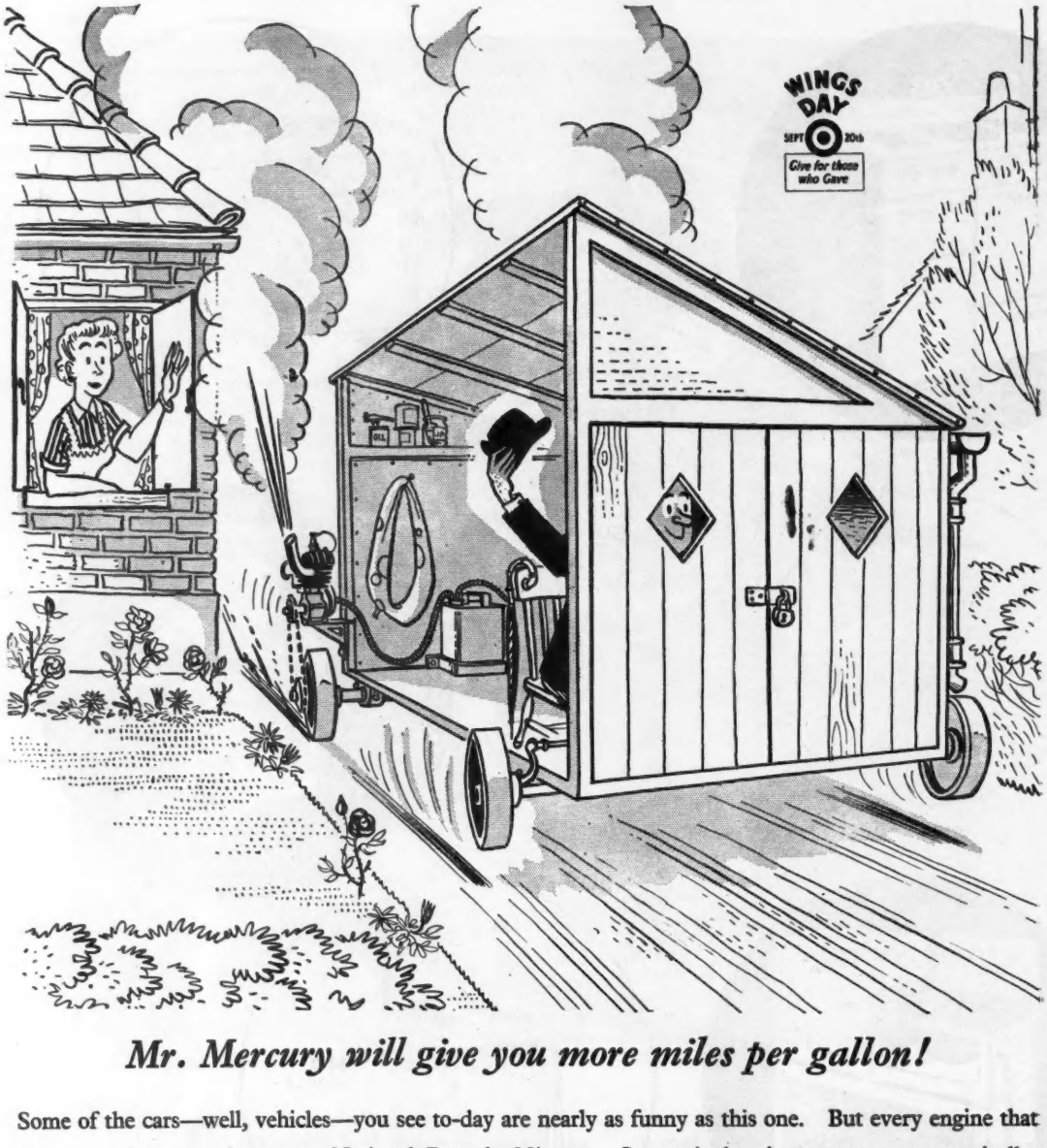




NEW WORLD NEW WORLD NEW WORLD

# MOTOR HOW YOU WILL...




*Mr. Mercury will give you more miles per gallon!*

Some of the cars—well, vehicles—you see to-day are nearly as funny as this one. But every engine that runs on petrol runs better on National Benzole Mixture. In particular, it runs more economically. It does more miles per gallon. The day that National comes back into the pumps will be the day that the cost of motoring goes down. Roll on that day!

**NATIONAL BENZOLE MIXTURE**

National Benzole Company Limited, Wellington House, Buckingham Gate, London, S.W.1.
(The distributing organisation owned and entirely controlled by the producers of British Benzole)

(*c*) the standardisation and, to a certain degree, the methods of tests and of analysis and of current practice in the various gasworks.

They are mainly reserved for officers who already have had practical experience in a laboratory and in the control of gasworks, including at least one year in gasworks practice. In exceptional cases and particularly with undertakings which are short of trained chemical personnel certain foremen who have not had a chemical training but are fully conversant with the control of works and laboratory practice are allowed to take part in these courses of training. Two types of course are arranged, one for the chemical engineers and the other for analysts and laboratory technicians. Each of these courses lasts 15 days and a group of three or four students is placed under the care of the chief chemist of the laboratory and of works control of one of the large gasworks in the Paris region. The chemical engineers, after a stay of a week in one of the laboratories of the Paris gasworks, continue their studies for a week in the various workshops and laboratories of the Direction des Etudes et Recherches de Gaz de France. The analysts spend two weeks in the laboratories attached to the undertakings in Paris and of its suburbs where they acquire up-to-date knowledge in regard to methods of test and of the chemical control in the manufacture and purification of gas. At the end of these courses a conference is arranged at which each of the participants is asked to give his criticisms of the organisation for the chemical control of their respective undertakings. Finally the chief chemist furnishes an assessed appreciation as to the merit and professional aptitude of each of the students.

## Italy :

Before the last war there was attached to the Milan Polytechnic a finishing school for engineers wishing to specialise in the gas industry. The teachers of this school were either the teachers of the Polytechnic or were gas engineers in charge of large gasworks in northern Italy. The course, which lasted six months, enabled the engineer pupils to acquire a knowledge of the organisation of the gas industry and of the most modern practice obtaining in various countries in the manufacture and distribution of town gas. Since the war the Milan school has not been re-opened but it is hoped that it will shortly be doing so.

The Societa Italiana per il Gas, which has its head office at Turin and which owns 43 gasworks, in 1946 initiated theoretical professional courses of technical instruction in the gas industry. These courses lasting three years aim at improving both the general knowledge and the professional and technical skill of the pupils. The courses are conducted either by:—

(*a*) A centre arranged by the management and secretariat of the professional schools of Italgas and conducted under the direction of the management of the Corporation;

(*b*) a centre at the Turin works of the Corporation;

(*c*) centres connected with certain other gas undertakings of the Corporation.

Each centre has a college of teachers presided over by the manager of the works or some other person designated by him. The teachers are normally chosen from members of the staff of the Corporation, but in exceptional cases collaboration is sought from ordinary teachers.

The curriculum is fixed each year by the college of teachers at Turin and then submitted to the various provincial authorities. Admission to the courses is reserved to workmen and engineers of the works and to their sons under the age of 25. The lessons last two hours and take place twice weekly outside working hours during the period November to April and the curriculum includes Italian, mathematics, physics, chemistry, gas production and gas distribution.

At the termination of the first and second years the pupils are required to pass a written examination, in accordance with their success in which the teachers fix their classification, at the same time informing the management of the Corporation by means of a report of the diligence and capabilities of each pupil. At the end of the third year the pupils are given an oral examination conducted by the college of teachers in the presence of a delegate of the Consortium Provincial pour l'Instruction Technique who endorses with his signature the final certificate given to the pupils obtaining a good classification.

The Edison Corporation is a limited company having its head office in Milan which owns the most important electrical undertakings in the north of Italy. It also owns the gas undertaking of Milan and controls the Societa Nazionale Gazometri of Milan which in turn owns the gasworks in 13 small towns. This Corporation has been engaged for some time in building up an educational organisation for the purpose of:—

(*a*) Training fresh staff and fresh works personnel (artisan industrial experts and engineers);

(*b*) improving the professional knowledge and technical skill of existing personnel.

## Netherlands :

(*a*) *Gas Fitters.*—Courses for gas fitters are organised by the Gawalo Foundation (a joint organisation of the Netherlands Gas Association, the Netherlands Water Association, and the Contractors' Organisation).

(*b*) *Gas Technologists.*—Correspondence courses for gas technologists are conducted by a private office.

The Higher School at Delft has a special course in technological chemistry which is concerned with combustion and the curriculum for which includes the manufacture of coke and gas, the construction of retorts and furnaces, refractory materials, and the purification of gas up to and including the gasholders.

## Sweden :

The Swedish Gasworks Association arranges from time to time as are required courses for foremen at gasworks and also for gas fitters. Several of the latter have been arranged, the last being chiefly devoted to the fitting of industrial gas installations.

## Switzerland :

Courses for gas fitters are organised by the Association des Maîtres Ferblantiers et Appareilleurs Suisses and are intended for apprentices for the examination leading to the Diploma of Master Fitter, Water and Gas, a Certificate conforming to the Federal Law of professional training of June 26, 1930.

Special courses for salesmen and saleswomen are organised according to requirements by the Société Coopérative Usogaz, and the Société Suisse de l'Industrie du Gaz et des Eaux arranges special courses of one week's duration from time to time for engineers and gasworks foremen.

## United States of America :

Specialised education leading to a degree is provided by the Institute of Gas Technology. Special courses for various grades of personnel (appliance fitters, engineers, accountants, salesmen, etc.) are arranged by the gas undertakings, the American Gas Association, the regional Associations and the appliance equipment manufacturers.

Q(3) (*a*) To what extent are these schemes operated by the (1) Professional gas association?

The Committee of the Association Technique de l'Industrie du Gaz en France establishes the programme and is in charge of the organisation of the Cours Commerciaux, the Cours de

Perfectionnement and of the Centre d'Etudes Supérieures Gazières. The advice of the Association is sought in connection with the preparation of the programme for the Cours de Promotion Ouvrière.

The Netherlands Gas Association is jointly responsible with the Netherlands Water Association and the Contractors' Organisation for the Gawalo Foundation which provides the course for gas fitters.

Courses for gas foremen and gas fitters are arranged by the Swedish Gasworks Association.

Courses for engineers and gasworks foremen are provided from time to time by the Société Suisse de l'Industrie du Gaz et des Eaux.

The American Gas Association is responsible for approximately one half of the special courses for training personnel.

Q(3) (*a*) (II) To what extent are there schemes operated by the Gas undertakings (whether nationalised or not)?

In France, the Cours de Promotion Ouvrière are administered by the Educational Department common to Electricité de France and Gaz de France. The apprenticeship centre at Versailles is administered by this same Department in collaboration with the Ministry of National Education.

In Italy, the Societa Italiana per il Gas and the Edison Corporation of Milan are entirely responsible for the initiation and administration of the three-year courses which have been set up to improve the general knowledge and professional and technical skill of selected pupils.

The gas undertakings in America are responsible for approximately one half of the special schemes for training personnel in the gas industry.

Q(3) (*b*) To what extent are these schemes operated in collaboration with other organisations such as universities, technical colleges and trade schools?

In Belgium, the School for Gas Fitters and Plumbers of the Institute of Arts and Crafts at Brussels recruits its teachers in specialist subjects from the technicians of the local gas undertaking.

In France, the courses of instruction are totally independent of external organisations, although the Centre d'Apprentissage de Versailles is conducted by a department of the Ministry of National Education in collaboration with the Department of Education and Training of Electricité de France and Gaz de France. Mention might also be made of the organisation of the courses of the Promotion Ouvrière which has been entrusted to the Ecole Spéciale des Travaux Publics, du Bâtiment et de l'Industrie in Paris, which places the accommodation and equipment of the School at the disposal of Electricité de France and Gaz de France and provides the teaching staff not pertaining to gas technique.

In the Netherlands, the course for gas fitters, initiated by the Gawalo Foundation, is administered by the Foundation in collaboration with the school of apprenticeship. The Higher School at Delft is responsible for the provision of the special courses in technical chemistry relating to combustion.

In Sweden, the courses for foremen and gas fitters are mostly operated by the Swedish Gasworks Association with a modest contribution from the State School Board. Teachers have been provided from the gasworks and from the technical colleges.

In the United States of America, there is collaboration with the education authorities in connection with some of the training schemes for the gas industry.

Q(3) (*c*) Do universities, technical colleges, or trade schools employ full-time specialist teachers in gas engineering, gas salesmanship, gas fitting, etc.?

In Austria, the Head of the Montanistic College is Professor Schuster who is a first class specialist in gasworks matters.

While there would not appear to be specialised instruction in gas subjects at school and technical colleges in France, most of the large engineering schools (the College of Arts and Crafts, the Central College, and the College of Mines, etc.) arrange courses or special lectures which are given by technicians drawn from the gas industry or from the manufacturers of gas apparatus and plant.

In Switzerland, at the Federal Technical School at Zurich there is a chair for general gasworks practice, the present holder of which is M. H. Deringer, Manager of the Winterthur gasworks, and there is another for installation practice at present held by M. Schellenberg, Manager of Gas Service of the Zurich undertaking.

In the United States of America, to a very limited extent full-time specialists are employed in the universities, technical colleges and trade schools.

Q(3) (*d*) To what extent are correspondence courses recognised and employed?

*France.*—The Cours de Perfectionnement administered by the Association Technique de l'Industrie du Gaz en France is a correspondence course which has the particular merit of arranging for the lessons and criticism of answers submitted to be sent to the pupils through the intermediary of their senior officers who serve as their tutors. Further, the correspondence course is associated with a period in the workshops, which immediately precedes the award of a certificate to those who complete the course satisfactorily. Also in France, various courses preparatory to the Cours de Promotion Ouvrière are conducted by correspondence.

*Netherlands.*—The course for gas technologists is conducted by correspondence.

*Sweden.*—No correspondence courses are as yet available although consideration is being given to the initiation of such courses for gas fitters. A correspondence course appropriate for young engineers and foremen at gas producing plants has recently been prepared.

*United States of America.*—Correspondence courses are used to a limited extent.

Q(3) (*e*) What authority is responsible for the conduct of courses at universities, technical colleges, trade schools, or by correspondence?

In Austria, the Ministry of Education and the Chamber of Commerce are responsible for the administration of courses undertaken at universities, technical colleges and trade schools and the gas undertakings held only in the matter of providing accommodation, film shows and works visits.

In the Netherlands, the courses at technical colleges are administered either by the State or by local municipal authorities.

Q(3) (*f*) If the answer to (*e*) above is that some authority other than the gas undertakings themselves is responsible as, for example, a professional gas association or a central or local education authority, what assistance is afforded to that authority by the gas undertakings:

(I) *By financial subsidies?*

(II) *By putting accommodation at its disposal?*

(III) *By making available specialist teaching staff?*

(IV) *By provision of technical literature and other aids to teaching, such as films and film strips?*

In most of the countries it would seem that the gas industry, either through the undertakings direct or through the professional gas association, assists in making accommodation available where necessary, and in arranging works visits, providing technical information, films and film strips, and by making available specialist teaching staff. In France the cost of providing educational facilities for personnel in the gas industry is to some extent offset by an exemption from the apprenticeship tax paid to the State by all commercial

(*Concluded on p. 587*)

THE SELF LIGHTING BURNERS SAVE FUSS AND TROUBLE...

"We chose a PARKINSON and we're very glad we did..."

...turn on the tap and the burner lights itself.



THE PARKINSON STOVE CO., LTD., STECHFORD, BIRMINGHAM 9

*A Member of the Parkinson & Cowan Group*

# quality production IN

*Ring boiling burners for cookers ready to go into one of the enamelling furnaces. Each burner is carefully examined to make sure that it has been evenly and completely covered with the enamel coating.*

*Cast-iron legs of a cooker receiving a dimensional check with the aid of a Height Vernier Scale. Such tests are carried out periodically to ensure that individual parts conform to a standard shape and size.*

**main** GAS APPLIANCES

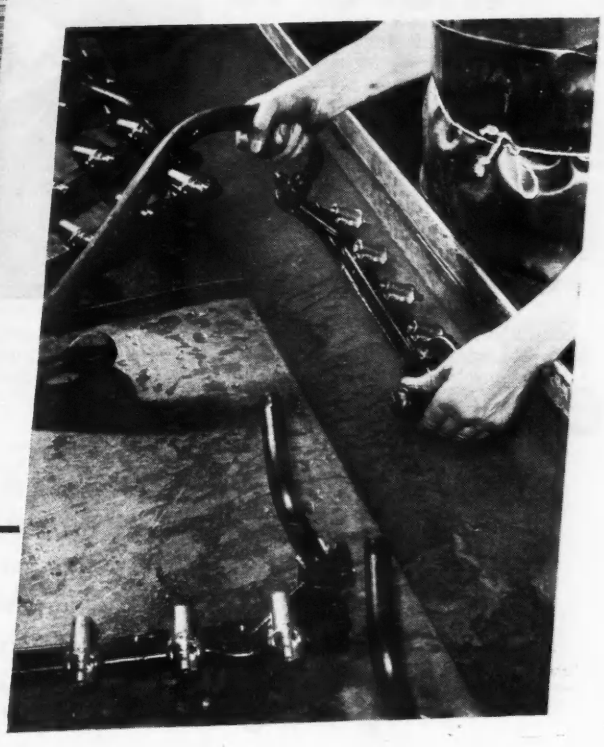
COOKERS • SPACE HEATERS • WATER HEATERS

MAIN

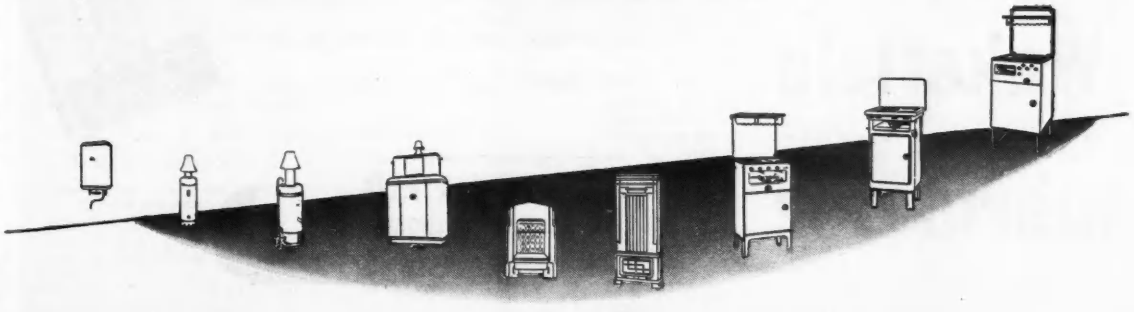
MT/351

## IN GAS APPLIANCE MANUFACTURE

*These oven grid-shelves have just been removed from one of the plating tanks. They have been given a plated finish, and are being closely inspected before being passed for issue to the general stores.*



*Testing cooker gas rails. An air hose is connected to one end of the rail, which is then immersed in water. This simple but effective test immediately shows whether or not the rails are gas-tight.*



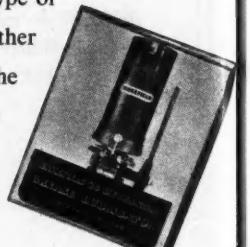
R. & A. MAIN LTD • MAIN WATER-HEATERS LTD.

The difference between a good lubricator and a **better** lubricator is the experience that lies behind it

# there is over 50 years' experience behind every Wakefield lubricator

*Hadfields 55" x 36" Crusher fitted with a Wakefield "Improved" 2G Mechanical Grease Lubricator. All types of plant requiring forced feed lubrication may be fitted with Wakefield Mechanical Lubricators.*

For over 50 years the Wakefield Company has made a specialised study of lubrication — that is why, today, the Wakefield "Improved" 2G Lubricator is recognised as one of the most efficient mechanical grease lubricators available. It is entirely British in design and construction and will operate economically with almost every type of grease in normal industrial use. For further details, a free descriptive booklet on the Wakefield "Improved" 2G Mechanical Grease Lubricator will be sent to you upon request.



**WAKEFIELD**
**MECHANICAL LUBRICATORS**

C. C. WAKEFIELD & CO. LTD., GROSVENOR STREET, LONDON, W.1

and industrial enterprises. Most of the special courses operated in France are the financial responsibility either directly or indirectly of Gaz de France, but the Centre d'Apprentissage de Versailles is the financial responsibility of the Ministry of National Education which receives financial support from Gaz de France.

## B.—Examinations and Qualifying Tests.

(*a*) PROFESSIONAL GRADES.—*What authorities are accepted as the examining bodies for assessing the examination qualification required for the various professional grades of personnel, such as engineers, accountants, lawyers, secretaries, chemists, physicists, etc.?*

(*b*) ARTISAN GRADES.—*What authorities are accepted as appropriate for administering qualifying tests for various grades of artisan—e.g., gas fitters?*

(*c*) TO WHAT EXTENT DO GAS UNDERTAKINGS OR THE PROFESSIONAL GAS ASSOCIATION COLLABORATE WITH SUCH AUTHORITIES?

In Austria the Ministry of Education is the accepted examining authority for professional grades of personnel while the artisan grades appear to be within the province of trade guilds. The gas undertakings and gas association collaborate with these authorities to the extent of exchange of views from time to time.

In France, in connection with the Centre d'Etudes Supérieures Gazières, a diploma is awarded by the Managing Committee of the Centre to students having reached a certain standard in their studies and in their oral interview. This Committee is presided over by the President of the Association Technique du Gaz and comprises about 10 members appointed by Gaz de France, the Association Technique du Gaz en France, the teachers, and a delegate of the Old Scholars Association. For the Cours de Perfectionnement a professional certficate (Brevet Professional de l'Industrie du Gaz) of the Gas Industry is awarded by the Ministry of National Education; for the Promotion Ouvrière, the students are classified according to their performance during the course and the positions offered by Electricité de France and Gaz de France give cognisance to this classification. For successful students at the Centres d'Apprentissage a Certificat d'Aptitude Professionnelle (C.A.P.) is awarded by a panel appointed by the Technical Education Department of the Ministry of National Education.

In Italy, a certificate is awarded by the Ministry of Public Education for the pupils who have successfully attended the courses arranged by Italgas and the Edison Corporation.

The Netherlands Gas Association organises an examination for gas technologists. A Board of Examiners appointed by this organisation carries out an examination at the end of the programme prepared by the Association. The Board of Examiners of the Gawalo Foundation, appointed by the Netherlands Gas Association, the Netherlands Water Association and the Contractors' Association, arranges the examination for gas fitters.

In Switzerland the examination for master fitter is organised by the Association des Maîtres Ferblantiers et Appareilleurs Suisses in conformity with a Federal Law on Professional Training of June 26, 1930. The professional gas association collaborates in this examination by supplying some of the teachers.

## C.—Facilities.

WHAT FACILITIES OR CONCESSIONS, IN TIME OR EXPENSES ARE GIVEN TO PERSONNEL TO ENABLE THEM TO UNDERGO AN APPROVED COURSE OF TRAINING AND TO ENTER FOR THE APPROPRIATE EXAMINATIONS?

In Austria assistance in regard to leave of absence and expenses is given in individual cases according to merit. In France, students attending the Cours de Perfectionnnement normally undertake their studies outside their normal hours of employment, but every facility is given to them by their manager to enable them effectively to follow the course. Travelling expenses and food and lodging expenses incurred during the examination and probation periods are reimbursed to the students by their undertakings. Leave of absence is paid to those selected to attend the Cours de Promotion Ouvrière or the Centre d'Etudes Supérieures Gazières.

In Italy those admitted to the courses administered by Italgas and the Edison Corporation have their out of pocket expenses paid and in addition receive text-books and writing materials free of charge from the schools.

In the Netherlands a certain part of the cost of the course for gas technologists or gas fitters is paid by the gas industry.

In Sweden and Switzerland the gas undertakings normally pay all expenses involved in sending candidates to courses organised by the gas associations. In America, there is no standard practice in regard to facilities which is a matter as between the individual company and its employees.

---

# REMOVAL OF PYRITES FROM COAL

THE sulphur content of coal is from three sources:—(i) Organic sulphur—in combination with the coal substance; (ii) pyritic sulphur; and (iii) sulphate sulphur—due mainly to the oxidation of pyrites. For practical purposes the amount of sulphate sulphur in freshly-won British coals is negligible. In a paper entitled 'The Mineral Matter in Coal and its Relation to Coal Preparation' by Mr. A. Grounds and Mr. A. M. Wandless, presented to the Institute of Fuel, the authors point out that British coals at present produced vary in sulphur content from 0.5% to over 6%, the latter figure being exceptional.

Table 1 shows a classification of output for 1950 in terms of the range of sulphur content.

TABLE I.—*Sulphur Contents of British Coal Seams.*

| Ranges of sulphur content, % | % of output drawn from seams with sulphur contents |
|---|---|
| 1.0 and under | 39.7 |
| 1.1-1.5 | 24.9 |
| 1.6-2.0 | 16.0 |
| 2.1-2.5 | 9.0 |
| 2.6 and over | 10.4 |
| | 100.0 |

The average sulphur content in current production is 1.5% but the amount of organic sulphur varies only from 0.8% to 1.0% although there are exceptions. Therefore, on the average, British coals in current production contain about 0.6% of pyritic sulphur. In terms of current production, this amounts to over 1 mill. tons of sulphur and over 2 mill. tons of pyrites. Thus, if the pyrites in the coal could be recovered, not only would an undesirable constituent be removed, but the country would be self-supporting in a vital commodity. During the war, just over 30,000 tons of impure pyrites averaging about 40% sulphur content per annum was attained, being less than 2% of the amount potentially available.

At sight, the problem of separating such a mineral as pyrites, with a specific gravity of 5, from coal, which has a specific gravity of about 1.3, appears simple. It has to be remembered, however, that the large nodules occasionally visible in the coal are but a small percentage of the total, most of the pyrites being extremely finely divided, which makes separation, if not altogether impossible, at least uneconomical. Research work on a sulphurous coal has shown that substantial proportions or aggregations of pyrites consist of individual bodies with diameters as small as from two to six microns; that the major portion is present as tiny nodules of from 100 to 150 microns diameter.

It is clear, therefore, that any quantitative recovery of pyrites from coal at a reasonable cost is unlikely.

# THE NEW A&M OPTIONAL METER

We confidently present our latest coin meter available for pennies and shillings, sixpences and shillings, or half-crowns and shillings and readily adjustable for single coin operation at the gas engineer's option.

The mechanism embodies the fruits of many years' research, every part is precision made to close limits, range-plates are interchangeable - absolutely - one meter with another.

## ALDER & MACKAY LTD

### NEW GRANGE WORKS, EDINBURGH

*Also at*
BRADFORD · MANCHESTER · LONDON · BELFAST · NEWCASTLE-ON-TYNE · CORK

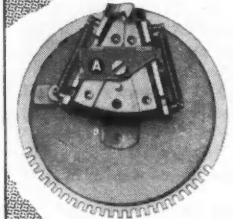


Fig. 1, on left, shows the back of the range-plate adjusted for optional coin. The swinging plate 'A' defies any attempt to insert a coin when one is already in the other slot.

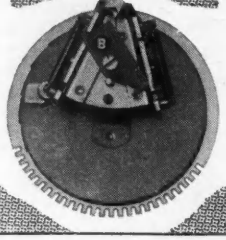


Fig. 2, on left, shows the plate positioned to admit sixpences only. To make this adjustment, loosen screw 'B' and tighten it again with the plate in the new position.

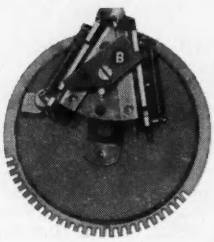
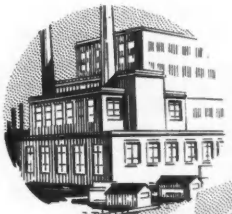
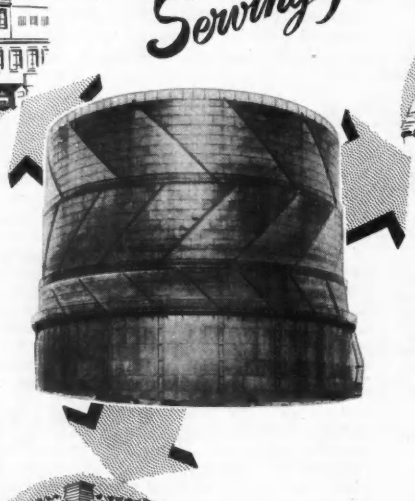
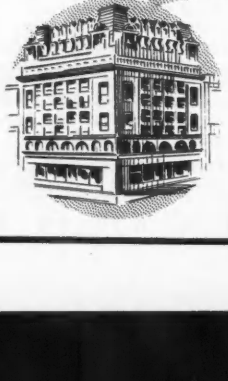


Fig. 3, on left, shows the plate positioned for shillings only. To make this adjustment, remove screw 'B', reverse the plate as shown and replace the screw.



*Sewing Factories, Offices and the Home*





# GASHOLDERS
by
# CUTLERS

CONDENSERS
PURIFIERS
STEEL TANKS

GENERAL STEEL CONSTRUCTIONAL WORK

**SAMl. CUTLER & SONS LTD**

39 VICTORIA STREET, WESTMINSTER, S.W.1
Phone : Abbey 3121 Grams : Retortus, Sowest, London

PROVIDENCE IRON WORKS, MILLWALL, E.14
Phone : East 5231-2 Grams : Cutler, Millwall, London

# Research in a Changing World

By H. H. CUTHRELL,
President, Brooklyn Union Gas Company.

**From an address at the 45th Annual Convention of the Canadian Gas Association**

THE fact that natural gas can be transported to Brooklyn from the south west through a $250 mill. pipeline system and purchased by us at cost lower than we can make gas from raw materials is rather startling. We have always been proud of the operating efficiencies of our plants at Brooklyn Union, and yet, despite a background of more than a century of technical developments in gas production, we cannot match the thermal cost of gas delivered all the way from Texas. There are qualified gas production authorities, however, who feel that new processes are within practical realisation whereby gas can be produced from coal or oil at a cost equal to or lower than pipeline gas. But these prospects are not likely to become realities unless some real effort is made to get the answers. This, in plain terms, means a comprehensive and expanded research programme.

At the present time, with total gas industry revenues of around $2½ billion, we are spending about $600,000 annually under the industry P.A.R. programme on research. This is at the rate of 2½ cents for each $100 of revenue. I feel this expenditure is wholly inadequate in view of the circumstances facing the industry. I should like to point out some of the basic reasons which emphasise the need of a vastly accelerated research programme as part of the gas industry's expanded planning.

We face the prospect of losing ground to the technical progress of our competition. Our major competition comes from the oil and electric industries. Both of these formidable adversaries have expanded since World War II at an even greater degree than the gas industry. Both are far ahead of us in research.

## Competitors Expenditure in Research

By its nature, the oil industry has been forced to spend prodigiously on research. Competition is so severe within the industry that individual companies have had to maintain large technical staffs to develop constantly improving operating efficiencies and petroleum products. Most recent estimates indicate research expenditure by the petroleum industry of 60 cents per $100 of revenue, a ratio some 24 times as high as the gas industry expenditures. Over $100 mill. is spent for research annually by the petroleum industry. In the five years 1946 through 1950, the petroleum industry has expanded its investment over $12 billion, an amount greater than the total existing investment in the gas industry. This has been done almost entirely with internal funds so that the new plant is in a sense fully paid for. A tremendous demand for petroleum products has kept the price of oil at a relatively high level. But—and this is important—if the demand should slack off, the oil industry can afford to take a substantial cut in fuel oil prices without seriously disturbing its financial structure.

The electric utility industry, in addition to its own research, draws tremendous support from the electric equipment industry—headed by those two giants, General Electric and Westinghouse. And they spend huge sums on research. According to a recent survey by the National Industrial Conference Board, the electrical appliance industry spends in the neighbourhood of $1.60 per $100 of revenue.

The electric utilities are expanding plant facilities at a tremendous rate. Unlike the oil companies, almost all this expansion has been met by the sale of securities. The electric utilities must earn a return on this investment to service the new securities issued. When the present abnormal industrial demands ease off, it will be necessary to obtain revenue from other sources. The most likely field is the residential market. Even now the electric industry is making rapid strides in electric cooking. Promotional efforts by electric companies are increasing, and some companies are making a serious attempt to obtain the water heating load and even the home heating load.

With its increased dependency on natural gas, there is an inevitable tendency for the manufactured gas industry to reduce its technical production staff. While laboratory research has traditionally and, in my opinion, rightfully been carried on as a joint industry effort, the applied research has grown out of the work of the men actually responsible for meeting the daily sendouts. With the advent of natural gas, many of these highly trained technical men are being shifted to other phases of the business. As an industry, we are losing something intangible but very valuable in this change. I know from our own experience that in recent years the production staff in our company, working under terrific pressure, has time and again come up with unusual and workable ideas which have made our production facilities perform far beyond their rated capabilities. This was the result of instinctive application of years of production background to new problems. The metal capabilities of these men will not decline, but it is inevitable that operating know-how will get rusty in the absence of the unrelenting pressure of coping with sendout demands from day to day.

## Logical Fields for Development

Obviously, there is need for a greatly enlarged industry effort in research, in regard to both operation and utilisation. It is difficult to appraise the amount that any business or industry should spend on research. However, it is fairly clear at this time that certain logical fields of research are awaiting development by the gas industry. I shall list a few of those which seem important to me.

*Natural Gas Exploration Techniques.* Whatever progress has been made in improving the methods of finding new gas and oil reserves must go for the most part to the petroleum geologists of the oil industry. Some of the major natural gas producing companies have contributed to this specialised phase of geology, but the gas industry has done very little. Tremendous strides have been made in recent years, but gas and oil exploration still remains a rather chancy business. Certainly, the gas industry with its future increasingly dependent upon expanding gas reserves has a very real interest in underground geology. Advances in the ability to evaluate accurately the nature of underground structures are related not only to locating new gas fields but also geologic formations suitable for the storage of natural gas. Here is a field of research where we can join hands with the petroleum industry to mutual advantage.

*Gas Transmission Techniques.* With the development of long distance natural gas pipelines, important improvements have been made in design and operation of the lines. The fact remains, however, that this is a field of research which can pay rich dividends to the industry. We hear so much these days about rising field prices of natural gas that we overlook the much more important cost factors of getting the gas to market. In the case of Brooklyn Union, for example, the field cost of gas represents less than 25% of the total cost of gas to us. There is a possibility that we are requiring too much of a safety margin in the design specifications of pipelines. Maybe wall thicknesses of pipe are excessive; possibly new metallurgical developments could produce thin-walled pipe capable of carrying higher pressures than we now use. The gas turbine opens entrancing prospects for reducing compression costs. As an industry, we have done some things in this field, but most of the developments have come from the equipment manufacturers and the pipeline installers. It is time we did something substantial ourselves, perhaps in co-operation with the pipe fabricators and the compressor manufacturers. There is nothing in prospect to indicate that the basic materials of pipelines will become cheaper. Thus, it behoves the gas industry to do something to assure that the money invested in pipelines is being most efficiently utilised.

*Production Research.* I have already indicated the more obvious reasons for an enlarged development programme in gas production. The A.G.A. research programme has already

accomplished much in oil gas research. It is my opinion, however, that our long-term interest lies in the possibilities of developing an economical pipeline gas from coal. The coal industry has a definite stake in this, and it has done considerable development work in this direction. Here, surely, is a field of research in which two important industries have an unusual mutuality of interest. Does it not seem logical that coal and gas men should join hands in a full-fledged research effort which means so much to both?

*Gas Meter.* There has been little change in the gas meter in the last 50 years. The gas industry has with rightful pride claimed an unusual degree of accuracy for its meter. Without commenting on the unmistakably mid-Victorian appearance of the meter, the fact remains that the purchase prices and repair costs are increasing rapidly. Some worthwhile results could come out of a research project which developed a cheaper, simpler, more rugged, and better looking gas meter.

*The Heat Pump.* The gas industry has shown a singular lack of interest in the heat pump. We have taken the position of asking why become serious over a heating method which we can beat on an operating cost comparison in most areas. I feel this is a foolish attitude to adopt. I can recall similar attitudes with respect to electric cooking and water heating which, despite complacent logic, have taken hold strongly even in established natural gas areas. Every technical man knows that the principle of the heat pump is adaptable to any fuel that will drive a pump. As a matter of fact, a gas-driven heat pump has some definite operating advantages over the electric heat pump. Some work on gas heat pumps has been done by engine manufacturers. I feel this work should be expanded and an effort made at least to duplicate the research activity of the electric industry. I am personally intrigued over the prospect of a gas-driven heat pump unit which could at the same time generate electricity for the home.

*Basic Study of Energy Requirements.* The previous areas for research that I have mentioned have dealt with the development of physical techniques, resources, or applications. But, we in the gas industry cannot afford to stop our research here. I believe that the gas industry must constantly bear in mind its role as a source and method of distribution of energy. And, further, that we determine and establish its rightful role from the standpoint of national, even continental, welfare. Therefore, I suggest that as an industry we take steps to keep abreast of the total energy requirements of our constantly increasing standard of living and the relationship of gas energy. This implies accurate and continuing estimates of the supply and demand for natural gas, improvement of our forecasting and projecting techniques, and market research with the emphasis on maximum long-range utilisation efficiencies.

There are many other worthwhile projects which the industry should undertake which I have not mentioned. For example, I feel that we are doing far too little in appliance research, and seeing how much we have accomplished with a modest industry expenditure in recent years I am fairly certain that the results could be most gratifying with a relatively small additional effort.

## A Future Programme in Outline

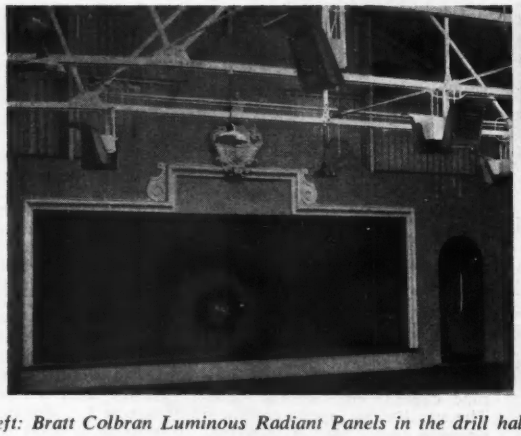
I am sure that, if we act with our traditional unity in the face of big problems, we can produce some wonderful results. Having been so critical, it is only fair to expect of me some constructive suggestions for implementing the expanded research programme I am urging. These are my suggestions:

(1) *An increased contribution by the industry towards research.* I suggest an effort be made to obtain a commitment from the companies to increase the gas industry sponsored research for a start to $5 mill. annually. This would represent an expenditure of the industry of about 2/10 of a cent per dollar of revenue.

(2) *A reinforced research staff.* I am strong for basic supervision of industry research by industry committees. At the same time, I think it is impractical to embark on an enlarged research programme without first reinforcing the staff which will direct the actual work. This implies no criticism of the men now so engaged, but it is simply common sense that if we are to increase our expenditure ten-fold we must expect to increase the staff responsible for its efficient use. I also feel that our research problem is too big to be encompassed in a general research and promotion plan and, therefore, I strongly support the current proposal in the A.G.A. to separate research and promotion.

(3) *Co-operation with other industries.* We should take steps immediately to develop joint research projects with other industries in fields of mutual interest. This will not only obtain for us a saving in cost, it will also provide us the benefits of technical progress outside our own industry.

# GAS AT TERRITORIAL ARMY CENTRE



*Left: Bratt Colbran Luminous Radiant Panels in the drill hall. Right: Bratt Colbran Wedge Heaters in the garage.*

LAST month, the Duke of Gloucester opened the new Territorial Army Centre for the Queen Victoria's Rifles (K.R.R.C.) at 56, Davies Street, W.1. This is a most impressive headquarters, designed by Mr. Trenwith Wills, F.R.I.B.A., and equipped with a comprehensive gas installation for which the staff of the Public Services and Central Services Sections of the North Thames Headquarters Division were responsible.

The building houses a drill hall, garage, rifle range, separate messes, kitchens, baths and lavatories for officers, sergeants and 'other ranks,' and caretaker's flat.

Central heating is by an Ideal 3 GBA series 7 section gas-fired boiler supplying hot water to 42 Ideal classic pattern radiators, and for the hot water supply serving the three separate lavatories and showers (as well as the caretaker's flat) an Ideal 1 GBB series 7 section gas-fired boiler has been fitted together with a 250-gal. storage calorifier.

In the drill hall, 11 Bratt Colbran overhead luminous radiant panels have been installed in a series of 'banks.'

Owing to the intermittent use of the garage, 13 hand-controlled Bratt Colbran overhead wedge heaters (garage pattern) have been installed, and in the rifle range one De La Rue overhead panel heater is fitted.

# E. C. & J. KEAY, LIMITED

**CONSTRUCTIONAL ENGINEERS AND IRONFOUNDERS**

Cast Iron Purifiers temporarily erected in our Works prior to despatch

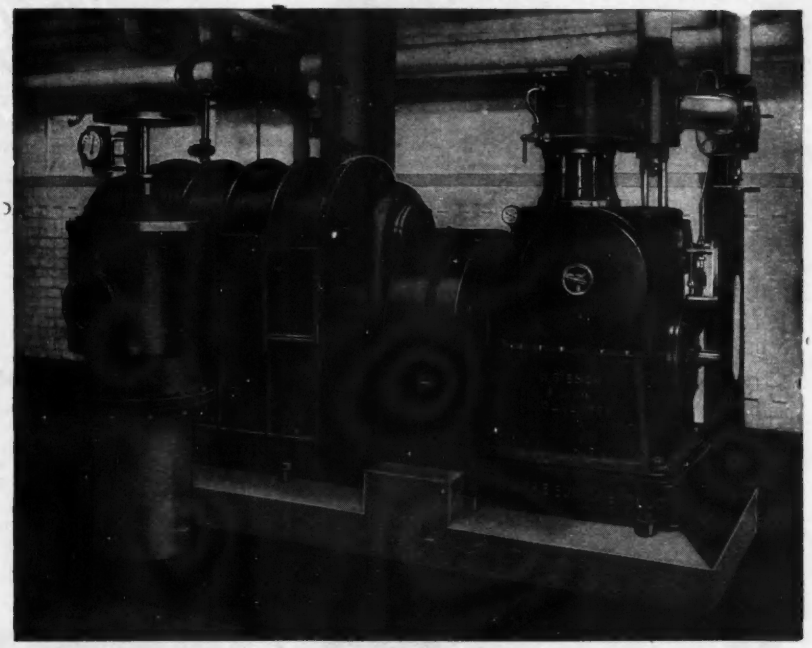
*Head Office:*
"Runnymede,"
Stratford Road,
Henley-in-Arden,
Warwickshire

*Also Offices*
*at*
LONDON
SOUTHAMPTON

**Specialists in TANKS,** Steel or Cast-Iron, Riveted or Welded, etc.
**JAMES BRIDGE WORKS, DARLASTON**

# SISSON STEAM ENGINES

**DESIGNED**
**for**
**driving**
**EXHAUSTERS**
**BOOSTERS**
**COMPRESSORS**
**ETC.**



SISSON ENGINE DRIVING WALLER-ROOTS EXHAUSTER (By courtesy of Messrs. G. Waller & Son, Ltd.)

**DEPENDABLE**
**for**
**NON-STOP**
**DUTY**

**SUITABLE**
**for**
**GAS**
**GOVERNOR**
**or**
**AUTOMATIC**
**CONTROL**

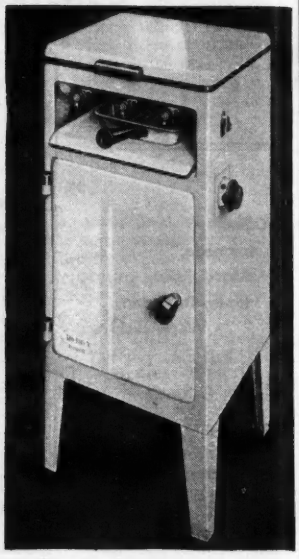
Telegrams:— SISSON. **W. SISSON & CO LTD., Gloucester, Eng.** Telephones:— 22295-6.

CRANE
LTD

GUNITE
PNEUMATICALLY PLACED CONCRETE
DENSE · DURABLE · HIGH STRENGTH
for
LININGS FOR STEEL
COAL & COKE HOPPERS
RESTORING DISINTEGRATED
CONCRETE STRUCTURES etc.
*Get in touch with us for engineering data and estimates*
THE GUNITE CONSTRUCTION CO. LTD.
WESTERN HOUSE, HITCHIN, HERTS. Tel. 571.

*For small Kitchens and Flats...*

The
**Dainty**
**MINOR**



This efficient little cooker of large capacity is made especially for small kitchens and flats.

Its cast iron construction ensures durability and low maintenance cost.

For hire purchase or for simple hire. The 'Dainty' Minor is ideal.

Approved and adopted by leading gas boards.

Leaflet fully describing this efficient, attractive and economical cooker will gladly be sent.

**R. RUSSELL & SONS LTD., DERBY**

*Agents for Scotland and Northern Ireland :*
JAMES R. THOMSON & CO. LTD. 41, York Street, Glasgow

*Enamelware of Quality*

NAMELL
LININGS, SPLASH BACKS AND TRAYS
reduce the cost of cooker maintenance
*Made only by*

NATIONAL ENAMELS LTD
53 NORMAN ROAD GREENWICH. S.E.10
TELEPHONE:-
GREENWICH 2266 & 2429

**COMPRESSORS & EXHAUSTERS** FOR AIR AND GAS.
See our Advertisement Next Week.
**REAVELL & CO. LTD. IPSWICH.**

**EWART CHAINBELT CO., LTD.**
**DERBY, ENGLAND**
Driving and Conveyor Chains of the best quality; made of Ley's Celebrated Blackheart Malleable Iron.
ALSO COMPLETE CONVEYORS AND ELEVATORS

**OXIDE**
DUTCH AND DANISH BOG ORE
SPECIALLY ACTIVATED OXIDE OF IRON
Oxide supplied on loan or sale outright.
Highest prices paid for Spent Oxide.
Send your enquiries to
**GAS PURIFICATION & CHEMICAL COMPANY LIMITED**
ESTABLISHED 1873
PALMERSTON HOUSE, OLD BROAD STREET, LONDON, E.C.2.
Telegrams: "Purification, Stock, London." Telephone: London Wall 5077

**FIRE!**
WHERE'S YOUR
**NU-SWIFT?**
The World's Fastest Fire Extinguishers —for every Fire Risk
Pressure-operated by sealed $CO_2$ Charges
NU-SWIFT LTD · ELLAND · YORKS
*In Every Ship of the Royal Navy*

**"KLEENOFF"** *
THE COOKER CLEANER
**"KLEENOFF"**
FIBRE BRUSHES
RUBBER MOPS
**KETTLE DESCALER** *
(NEW "KLEENOFF" PRODUCT)
* For resale to the public, and in bulk for Works use
**BALE & CHURCH, LTD.**
7, CROMPTON WAY, CRAWLEY, SUSSEX.

## APPOINTMENTS VACANT

*The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.*

**APPLICATIONS are invited for the position of** SENIOR DRAUGHTSMAN with a Company in the Midlands specialising in the manufacture and erection of gas-works plant, oil storage tanks, and general jobbing foundry work. Applicants must be between 25 to 40 years of age, and corporate members of either the Institution of Civil, Structural, or Mechanical Engineers, or hold an Engineering Degree. Previous experience with Gas-Works Contractors is an advantage, and knowledge of foundry work is desirable. The position has good prospects of future advancement. Small modern house will be available shortly at reasonable rent. Commencing salary £750 per annum. Strict secrecy will be observed. Apply: No. 119, *Gas Journal* 11, Bolt Court, Fleet Street, London, E.C.4.

### EAST MIDLANDS GAS BOARD

SHEFFIELD & ROTHERHAM DIVISION

**APPLICATIONS are invited from suitably** qualified persons for the position of SHOWROOM SUPERINTENDENT in the Sales and Service Centre shortly to be opened in Sheffield. Applicants must have had considerable experience of showroom supervision and sales of appliances and be conversant with modern service methods.

The salary for the position will be not less than £645 per annum according to qualifications and experience. The post is superannuable and the successful applicant may be required to pass a medical examination.

Applications stating age, qualifications and giving details of experience together with the names of two referees, should be addressed to reach the undersigned not later than September 18, 1952.

C. C. WOOD,
Divisional General Manager.

Gas Offices,
Commercial Street
Sheffield, 1.
September 1, 1952.

### EAST MIDLANDS GAS BOARD

EDUCATION AND WELFARE OFFICER—
LINCOLNSHIRE DIVISION

**APPLICATIONS are invited for the post of** EDUCATION AND WELFARE OFFICER in the Divisional Office of the East Midlands Gas Board at Lincoln.

The successful applicant will be responsible for the detailed organisation and implementation of education, training and welfare schemes for the employees of the Division. Candidates should have a good educational background, administrative ability and practical knowledge and experience of training and welfare schemes in Industry. A working knowledge of the Safety Regulations made under the Factories Acts will be an advantage.

The salary will be within the range of £595 to £695. The appointment will be superannuable and the successful candidate may be required to pass a medical examination.

Applications giving age and full particulars of qualifications and experience, together with the names of two referees should be addressed to the undersigned to arrive not later than September 20, 1952.

BERNARD CLARKE,
General Manager.

Lincolnshire Division,
Gas Distribution Centre,
Carholme Road,
Lincoln.
September 5, 1952.

### EAST MIDLANDS GAS BOARD

NOTTS & DERBY DIVISION

DERBY UNDERTAKING

**APPLICATIONS are invited from suitably** qualified persons for the following appointments at the Derby Undertaking :—

(1) SENIOR HOME SERVICE ADVISER

Candidates must hold a recognised diploma in, and have practical experience of, cookery and domestic science, and be capable of demonstrating and promoting the use of gas appliances, and in advising consumers on kitchen and other domestic problems involving the use of gas appliances, and in advising consumers on kitchen and other domestic problems involving the use of gas.

The salary will be within Grade A.P.T. VII (female) £420-£484 according to qualifications and experience.

(2) HOME SERVICE ADVISER (HEANOR DIST.)

Candidates must hold a recognised certificate in Plain Cookery and/or Domestic Science, and be capable of promoting the use of gas appliances and in advising consumers on kitchen and other domestic problems involving the use of gas.

The salary will be within the range £184-£420 per annum according to qualifications and experience.

The positions are superannuable and the successful candidates may be required to pass a medical examination.

Applications stating age, qualifications and experience giving full particulars of training and qualifications, together with the names of two referees should be addressed to Mr. A. Facer, Manager, Derby Sub-Division, East Midlands Gas Board, 7, Friar Gate, Derby, not later than September 20, 1952.

K. L. PEARCE,
Divisional General Manager.

### NORTH THAMES GAS BOARD

**LABORATORY ASSISTANTS (MALE), from** 20 to 25 years of age, are required in the Laboratories at Beckton, E.6, Poplar, E.14, Harrow, and Mill Hill, N.W.7, to assist in production work, and at Fulham, S.W.6, in the Research Laboratories.

Candidates should have matriculated or obtained exemption therefrom or hold Inter B.Sc. qualification. Starting salary range will be at the rate of £320 per annum to £415 per annum according to age and qualifications.

Applications giving age and full particulars, should be addressed to the Staff Controller, North Thames Gas Board, 30, Kensington Church Street, London, W.8, quoting reference number 666/42.

### NORTH WESTERN GAS BOARD

BLACKBURN GROUP
CONSTRUCTION AND MAINTENANCE ENGINEER—
GREENBANK WORKS, BLACKBURN

**APPLICATIONS are invited for the above** position at a salary within Grade A.P.T. IX (£595-£695 per annum).

Candidates should have had practical experience in the erection and maintenance of mechanical and electrical plant, and the possession of Mechanical Engineering qualifications will be an advantage.

The successful applicant will be responsible to the Station Engineer for the maintenance of all mechanical and electrical plant and records at this Works, the control of workshops and craftsmen, and for the supervision of constructional work, as may be required. He may be required to pass a medical examination and to subscribe to such superannuation scheme as the Board may adopt.

Detailed applications, giving the names of two referees, should reach the General Manager, North Western Gas Board, (Blackburn Group), Cardwell Place, Blackburn, within fourteen days.

### NORTH WESTERN GAS BOARD

BLACKBURN GROUP
SHOWROOM MANAGER—
BLACKBURN SHOWROOMS

**APPLICATIONS are invited for the above** position at a salary within Grade A.P.T. VII (£525-£605 per annum).

Applicants must have had experience of Showroom supervision and sales, and preference will be given to holders of the Institution of Gas Engineers' Certificate in Gas Salesmanship and Consumer Service.

The successful applicant may be required to pass a medical examination, and to subscribe to such scheme of superannuation as the Board may adopt.

Detailed applications giving the names and addresses of two referees, should reach the General Manager, North Western Gas Board, (Blackburn Group), Cardwell Place, Blackburn, within fourteen days.

### NORTHERN GAS BOARD

SUNDERLAND DIVISION

**APPLICATIONS are invited from suitably** qualified persons for the following appointments :

ENGINEERING DRAUGHTSMAN :

Applicants should preferably be experienced in the design, construction and maintenance of Gas Works Plant. A sound knowledge of civil engineering and structural steelwork will be an advantage.

Salary—Grade A.P.T. VIII, scale (£565-£645) and conditions in accordance with the Agreement of the National Joint Council for Gas Staffs. Commencing salary commensurate with qualifications and experience.

TECHNICAL ASSISTANT :

Applicants should be competent to control Gas Works Plant and should have Laboratory and Drawing Office experience.

The appointment will be subject to the conditions of service set out in the Agreement of the National Joint Council for Gas Staffs and the salary will be within either A.P.T. Grade IV (£290-£480) or V (£445-£525) according to age and experience.

The successful candidates will be required to pass a medical examination and the appointment will be subject to the provisions of such Superannuation Scheme as may be adopted by the Board.

Applications stating age, qualifications and experience together with *copies* of two recent Testimonials should be forwarded to the undersigned within fourteen days of the issue of this advertisement.

W. O. KIRKWOOD,
Divisional General Manager.

Fawcett Street,
Sunderland.
September 2, 1952.

*(Classified advertisements continued on Supplement 4)*

## APPOINTMENTS VACANT (ctd.)

**SALES REPRESENTATIVE required for Southern Half England who has an established connection with maintenance side of gas industry. One already calling who could undertake extra representation would have excellent prospects. First class line. Apply: No. 117, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.**

### EDWARD COCKEY & SONS LTD.

**APPLICATIONS are invited for positions as** SENIOR DRAUGHTSMEN who have completed National Service and with experience in Gasworks Plant Construction of Gasholders, Purifiers and Structural Work, etc. Salary according to experience and abilities. Apply in writing stating age, training, qualifications and past experience, to:—Technical Dept., Edward Cockey & Sons, Ltd., Garston Works, Frome, Somerset.

### WEST MIDLANDS GAS BOARD

WOLVERHAMPTON DIVISION
WOLVERHAMPTON DISTRICT
SHIFT ENGINEER

**APPLICATIONS are invited for the above** appointment.

Candidates should have practical experience of the control and working of Carbonising and Water Gas plants, and be capable of supervising general Gas Works plant operation.

The commencing salary will be within the range of Grade VII of the National Salary Scales (£525-£605 per annum), according to ability and experience. Candidates suitable for training for the post would be considered and the salary grade would be appropriate to age and experience.

The post is superannuable and the successful candidate may be required to pass a medical examination.

Applications, stating age, qualifications and experience, together with details of present and previous appointments and giving the names of two referees, should be addressed to Mr. F. C. Briggs, Divisional General Manager, West Midlands Gas Board, Wolverhampton and District Division, Kensington House, Bath Street, Dudley, Worcs., to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

### WEST MIDLANDS GAS BOARD

WARWICKSHIRE DIVISION
COVENTRY DISTRICT
ASSISTANT—
INDUSTRIAL GAS DEPARTMENT

**APPLICATIONS are invited from suitably** qualified persons for the above appointment.

Candidates must be experienced in the general application of heat and have some knowledge of metallurgy as applied to industrial processes.

It will be an advantage if applicants possess the Higher Grade Certificate in Gas Engineering (Supply) of the Institution of Gas Engineers, or equivalent qualification.

The salary for the post will be in accordance with Grade V (£445-£525 per annum) of the salary scales of the National Joint Council for Gas Staffs.

The post is superannuable and the successful candidate may be required to pass a medical examination.

Applications, stating age, qualifications, experience and present position, together with the names of two referees, should be addressed to Mr. A. Allen, Divisional General Manager, West Midlands Gas Board, Warwickshire Division, Gas Street, Coventry, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

### SCOTTISH GAS BOARD

GLASGOW DIVISION
DIVISIONAL CONSTRUCTION AND
MAINTENANCE ENGINEER

**APPLICATIONS are invited for the post of** DIVISIONAL CONSTRUCTION AND MAINTENANCE ENGINEER. The person appointed will be responsible for the specification, construction and progress of new projects, the reconstruction of existing plant and other engineering duties within the Division.

Candidates must be Corporate Members of an appropriate Engineers' Institution or hold a degree in Engineering Science. The commencing salary will be in accordance with experience and qualifications but not less than £1,250 per annum.

The successful candidate may be required to pass a medical examination and to join such contributory superannuation scheme as the Board may adopt.

Applications endorsed C. & M.E. stating age, education, qualifications and experience and the names of two referees should be submitted to the undersigned within 21 days after the appearance of this advertisement,

D. F. YOUNG,
Divisional Controller.

Scottish Gas Board,
Glasgow Division,
30, John Street,
Glasgow, C.1.
September 4, 1952.

### SCOTTISH GAS BOARD

GLASGOW DIVISION
VALE OF LEVEN DISTRICT
ASSISTANT MANAGER

**APPLICATIONS are invited for the position of** ASSISTANT MANAGER of the above Undertaking.

Candidates should possess the Higher Grade Certificate (Manufacture) of the Institution of Gas Engineers and have practical experience of Vertical Retorts, and the control of works plant generally.

The Salary for the post will be within Grades A.P.T. V-VI (£445 to £555) per annum, of the National Salary Scales, with placing according to experience and qualifications, plus free house, coal and gas.

Applications, stating age, training, qualifications and experience, and giving names of two referees, should be addressed to the undersigned within fourteen days of the appearance of this advertisement.

T. A. ROWAN,
District Manager.

57, North Street,
Alexandria,
Dumbartonshire.

### SCOTTISH GAS BOARD

NORTHERN DIVISION
APPOINTMENT OF MANAGER
TO PETERHEAD DISTRICT

**APPLICATIONS are invited for the position of** MANAGER of the Peterhead District Gas Undertaking.

Applicants must be qualified Gas Engineers experienced in modern Gas Works and Distribution practice, in the operation and control of Continuous Vertical Retorts, and in the supervision and administration of a medium sized Undertaking.

The salary will be on Scale Provincial 'A' Grade X (£645-£745) with free house, fuel and light.

The successful candidate will require to pass a medical examination and will be subject to the provisions of any superannuation regulations which may be made.

Applications giving full particulars of age, qualifications and experience, together with *copies* of three recent Testimonials, should be lodged with the undersigned within fourteen days of the appearance of this advertisement.

H. S. MILNE,
Divisional Controller.

50, Cotton Street,
Aberdeen.
September 3, 1952.

### SCOTTISH GAS BOARD

GLASGOW DIVISION
DIVISIONAL PRODUCTION ENGINEER

**APPLICATIONS are invited for the post of** DIVISIONAL PRODUCTION ENGINEER. The person appointed will be responsible for the planning and control of Gas Production and the co-ordination of Coke Oven Gas supplies within the Glasgow District and the Development of Gas Production within the Glasgow Division.

Candidates must be Corporate Members of The Institution of Gas Engineers and have wide experience of large scale coal carbonisation, carburetted water gas production and all ancillary processes. The commencing salary will be in accordance with experience and qualifications but not less than £1,250 per annum.

The successful Candidate may be required to pass a medical examination and to join such contributory superannuation scheme as the Board may adopt.

Applications endorsed D.P.E., stating age, education, qualifications and experience and the names of two referees should be submitted to the undersigned within 21 days after the appearance of this advertisement.

D. F. YOUNG,
Divisional Controller.

Scottish Gas Board,
Glasgow Division,
30, John Street,
Glasgow, C.1.
September 4, 1952.

### NEW ZEALAND GAS ASSOCIATION

CHEMISTS FOR
MOBILE TESTING SCHEME

**APPLICATIONS are invited from GAS CHEMISTS** for two positions in a new Mobile Testing Scheme which is to start operations early in 1953. Applicants should have a sound working knowledge of Continuous Vertical and Horizontal Retorts, Carburetted Water Gas Plant, and be conversant with routine gasworks testing.

The successful applicants will be required to visit various gasworks on a roster system; one chemist being away with the Mobile Laboratory, the other remaining in one of four fixed bases.

Commencing salary £600 per annum, accommodation expenses paid while away from base.

Successful applicants would be considered eligible for assisted passages under the New Zealand Government Immigration Scheme.

Applications, stating age, details of training, and appointments held should be made to the Secretary, New Zealand Gas Association (Inc.), c/o Wellington Gas Co., Ltd., Wellington, New Zealand, before November 30, 1952.

**REPRESENTATIVE required who is regularly** calling on Mains/Distribution Departments of Gas and/or Water Undertakings and willing to work on commission basis for the sale of a speciality in good demand.

Reply, stating area covered and full particulars to No. 120, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

### BRITISH COKING INDUSTRY ASSOCIATION

**APPLICATIONS are invited for the following** appointments:—

(i) TECHNICAL MANAGER. Salary £2,000-£2,250 per annum. Applicants must have first class practical and theoretical knowledge of coke carbonisation, particularly in coke ovens, and the uses of metallurgical coke.

(ii) COMMERCIAL MANAGER. Salary £1,750-£2,250 per annum. Applicants must possess thorough knowledge of coke marketing and distribution, including exports. Familiarity with marketing of by-products will be an advantage.

Both posts are pensionable. Salaries within the above ranges will be according to qualifications. Applications which will be treated as confidential, should, in the first place, be made in writing to the Director, 7 Grosvenor Street, London, W.1, not later than September 25. Envelopes should be marked T.C.M.

### SOUTH WESTERN GAS BOARD

CHELTENHAM SUB-DIVISION
WORKS FOREMAN—DURSLEY UNIT

**APPLICATIONS are invited for the position of** WORKS FOREMAN at the Dursley Unit.

Applicants should be good disciplinarians and have a sound mechanical knowledge of Gas Works machinery. Experience in control of Horizontal Retorts and C.W.G. plant is essential.

The successful applicant will be required to pass a medical examination and to reside in the Board's house on the Gas Works, which will be available at a reasonable rental.

The salary will be within Intermediate Grade VI (£420-£465 per annum) of the National Joint Industrial Council's Scale for the Gas Industry.

Applications stating age, qualifications, training and experience, together with *copies* of two recent references should be addressed to the undersigned to reach him not later than September 20, 1952.

A. L. MORRIS,
Manager.

Cheltenham Sub-Division,
South Western Gas Board,
North Street,
Cheltenham.

### EASTERN GAS BOARD

CAMBRIDGE DIVISION
PETERBOROUGH DISTRICT

**APPLICATIONS are invited for the position of** TECHNICAL ASSISTANT at Peterborough Gas Works.

Candidates should possess the Higher Grade Certificate (Manufacture) of the Institution of Gas Engineers and should have experience in the control of Vertical Retort installations and ancillary plant.

The salary for this position will be in accordance with A.P.T. Grade V Provincial 'A' of the National Salary Scales for the Gas Industry, and the commencing salary will be in accordance with the qualifications of the person appointed.

A flat in a good residential area will be available at a reasonable rent. The successful applicant may be required to pass a medical examination, and to subscribe to such scheme of superannuation as the Board may adopt.

Application endorsed "Technical Assistant" stating age, present position and details of training, qualifications and experience, together with the names of two referees, should reach the undersigned not later than twelve days after the publication of this advertisement.

J. HUNTER-RIOCH,
Divisional General Manager.

Eastern Gas Board,
(Cambridge Division),
52, Sidney Street,
Cambridge.

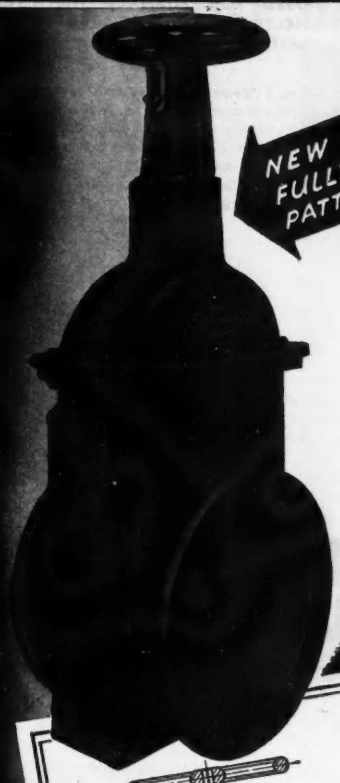
## PLANT FOR SALE & WANTED

**FOR SALE:—Elbows ½ in. Gas, malleable—parallel thread. Large quantities available. Apply: Buying Department, The Parkinson Stove Co., Ltd., Stechford, Birmingham, 9.**

**MOBILE AIR COMPRESSOR for sale.** ARMSTRONG WHITWORTH, 3 take off. Direct coupled to Dorman petrol engine, 100 c.f.m. at 100 p.s.i. Dennis Lorry Chassis with enclosed cab. Photo—F. J. Edwards, Ltd., 359, Euston Road, London, N.W.1. EUSton 4681.

**WANTED—REGULAR SCRAP GAS METER** AND PARTS. Best prices paid. Offers to Mitcham Smelters Ltd., Red House Road, Croydon, Surrey. *Tel.*: THOrnton Heath 6101 (Private Branch Exchange).

# HOLMES 'WESTERN'



NEW FULLWAY PATTERN

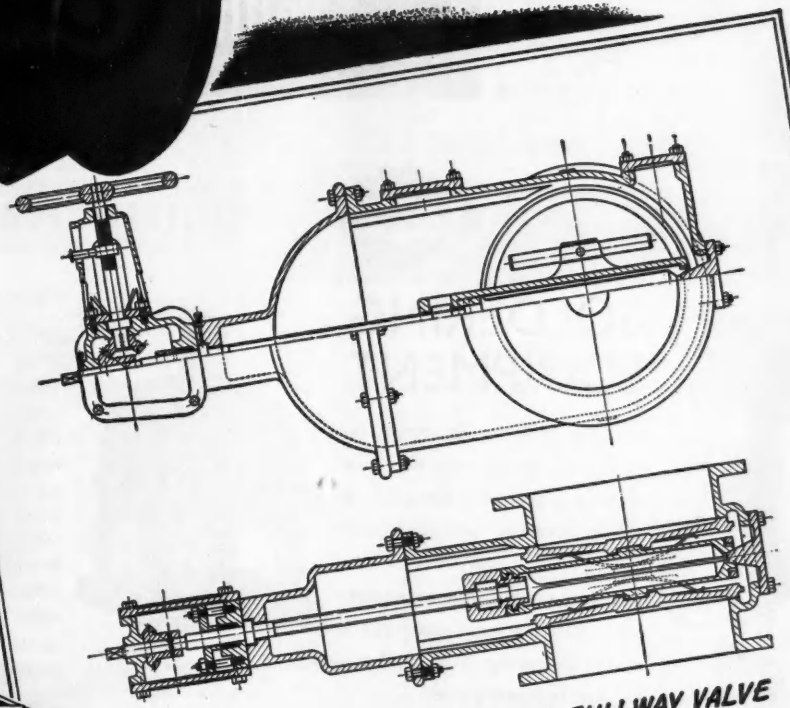
# VALVES

## (HORIZONTAL and VERTICAL TYPES)

**GREATER ACCESSIBILITY . EASIER ASSEMBLY**

**MORE ROBUST CONSTRUCTION . IMPROVED INDICATOR**

The new fullway valve, which can be used in under-pressure work, retains all the distinctive features of the older type of Holmes Western Valve, including easy access, whilst in use, to the interior components and self-cleaning double faces.



HOLMES 'WESTERN' HORIZONTAL FULLWAY VALVE

FOUNDED 1850 HOLMES HUDDERSFIELD

HEAD OFFICE • TURNBRIDGE • HUDDERSFIELD

LONDON OFFICE: 119 VICTORIA ST. SW1 • MIDLANDS OFFICE: 21 BENNETTS HILL BIRMINGHAM 2

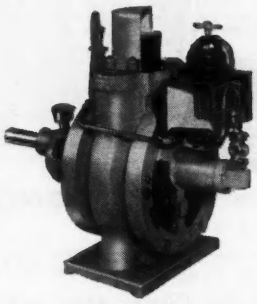
Telephones: Huddersfield, 5280 : LONDON, Victoria, 9971 : BIRMINGHAM, Midland, 6830

C 228

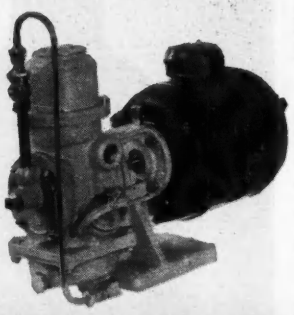
Tornado

# INDUSTRIAL GAS COMPRESSORS

FOR COMPRESSING AIR OR GAS SUPPLIED USED FOR FURNACE HEATING, METAL MELTING, BRAZING, SOLDERING BITS, LAUNDRY IRONS ETC.



TYPE 4 COMPRESSORS (see sectionalised illustration left) are fitted with automatic, internal, by-pass valves and lubrication. The complete unit includes motor and drive on a common bedplate, all of Keith Blackman manufacture.
CAPACITY RANGE: 500 to 20,000 cub. ft. of gas or air per hour at 3-5 lbs. per sq. inch pressure.
AREA OCCUPIED: from 9¼" x 16½" to 61" x 27".



INJECTORS BURNER NOZZLES BLOWPIPES RADIANT DISC BURNERS LAUNDRY AND TAILOR IRONS SOLDERING IRONS SOLDERING STOVES SMALL FURNACES

**"TORNADO"** AIR AND GAS MIXTURE CONTROLLERS AUTOMATIC CUT-OFF SWITCH (ALSO USED AS METER PROTECTION VALVE

**INDUSTRIAL GAS** AND AIR FLOW SWITCH) AUTOMATIC SHUT-OFF VALVES NON-RETURN OR BACK PRESSURE VALVES METER PROTECTION VALVES (BY-PASS TYPE)

**EQUIPMENT** RELAY THERMOSTATS THERMOSTAT CONTROLLERS DIRECT ACTING THERMOSTATS SERVICE GOVERNORS AIR FLOW SWITCHES COMPRESSORS GAS FIRED UNIT HEATERS GAS BOOSTERS AIR BLOWERS

DIRECT COUPLED COMPRESSORS (see illustration right) are fitted with automatic, internal, by-pass valves and lubrication systems. They are direct coupled to Keith Blackman motors. Type OA compressors in this range occupy a floor space of only 18" x 7½".
CAPACITY RANGE: 100 to 750 cub. ft. of gas or air per hour at 3 lbs. per sq. inch pressure.

Keith Blackman LIMITED

MILL MEAD ROAD TOTTENHAM LONDON, N.17

Phone: Tottenham 4522 (twelve lines) Grams: "Keithblac, Norphone, London"

432/7/GJ

BEST IN THE TRADE ALCOSA BRITISH MADE ★

Pattern No. B010. LB. Revolving Brazing Hearth, with legs for floor mounting, and complete with motorised ESV. Blower for supplying compressed air to a blowpipe.

## SOLDERING EQUIPMENT

ALCOSA Soldering Equipment ensures the utmost efficiency and economy in operation. Designed and manufactured by specialists with over 40 years' experience in heat treatment, the ALCOSA range covers every soldering requirement and is used by the leading aircraft, shipbuilding and engineering firms.

B2004. Supplied single or double-ended for two or four irons.

*The ALCOSA range includes:*

AIR GAS MIXERS FOR WIDE RANGE OF HEAT TREATMENT PLANTS, GAS BURNERS, GAS FIRED FURNACES FOR FORGING, HARDENING, ANNEALING, WELDING AND MELTING. HIGH SPEED BRAZING APPARATUS, SOLDERING AND BRAZING EQUIPMENT. TINNING BATHS. ALSO THE NEW WILKES B.2106S.L. BLOWPIPE.

*Write TO-DAY for lists and full details.*

# A.H.WILKES & CO.

A SUBSIDIARY OF WILLIAM ALLDAY & CO., LTD.

THE MOST DEPENDABLE NAME IN GAS APPLIANCES

ALCOSA WORKS · STOURPORT-ON-SEVERN · WORCESTERSHIRE · TELEPHONE: STOURPORT 311-4 · TELEGRAMS: YADALL STOURPORT
LONDON OFFICE & WORKS · CRESSWELL WORKS · SOUTH NORWOOD · S.E.25 · TELEPHONE: ADDISCOMBE 1167


Printed by Straker Brothers Ltd., E.C.2, for Walter King, Limited, 11, Bolt Court, Fleet Street, London, E.C.4, Wednesday, September 10, 1952

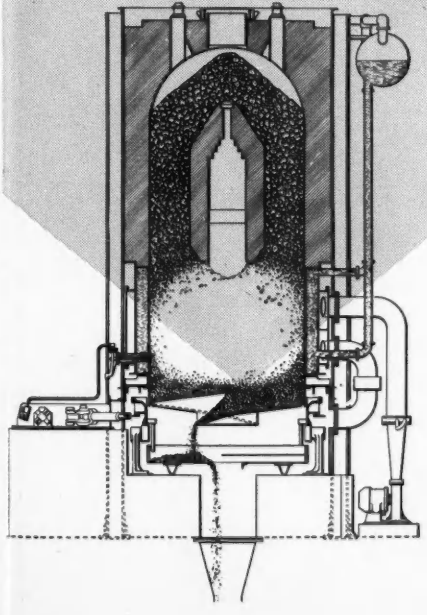
# WEST'S "HOT GAS" MECHANICAL PRODUCER

**HOT GAS EFFICIENCY 90%**

**REDUCES LABOUR COST**

**SAVES FUEL**

**DUST EXTRACTION 90%**



West's "Hot Gas" Mechanical Producer is a notable development in carbonization technique.

Fuel gas is drawn from immediately above the flare bed by a centrally placed offtake which is completely insulated, enabling full advantage to be taken of the sensible heat conveyed DIRECT to the setting. Ashes, removed by a revolving helical grate, show a marked reduction in combustible content. Constant depth of ash below the fuel bed is maintained by a novel device which controls the speed of the grate.

There is little variation in fuel gas quality. The producer is adaptable to various cokes and only low blast pressure is required.

## West's Gas IMPROVEMENT CO. LTD.

ALBION IRONWORKS · MILES PLATTING . MANCHESTER 10

Telephone: COLlyhurst 2961 Telegrams: Stoker, Manchester

London Office: Columbia House, Aldwych, W.C.2. Telephone: HOLborn 4108-9 Telegrams: Wesgasco, Estrand

P2

# In More and More Gas Works

PUBLIC WORKS & MUNICIPAL SERVICES EXHIBITION
OLYMPIA
3rd-8th Nov. 1952

1 TON SWIVEL HOOK ATTACHMENT

LOW OVERALL HEIGHT

HIGH CLEARANCE LONG REACH

**Muir-Hill** THE FAST *Loader*

**E. BOYDELL & COMPANY LIMITED**